## Rhode Island Department of Environmental Management

# Quality Management Plan

## September 16, 2005

Written by:

Thomas D. Getz (2002, 2003 and 2005 revisions)
Ombudsman and
Quality Assurance Manager

And

Terrence Gray
Assistant Director for Air,
Waste and Compliance

# Forward

This is the third revision of the Rhode Island Department of Environmental Management's Quality Management Plan (QMP). QMPs are required to be reviewed and updated annually and comprehensively updated every five years. The changes to the Quality Management Plan are considered a comprehensive update of the document. The DEM major update was not required for another year; however the need to begin program assessments required significant changes to the document. As a result of these revisions, a number of sections have been significantly rewritten and include:

- Section 6 has been updated to reflect the DEM Record Management Policy.
- Section 7 updates the plan on Hardware and Software Acquisition; Network Management, Data Back up and Recovery Procedures and Virus Protection; and Disaster Recovery.
- Section 8 concerning the systematic planning process has been basically replaced. This section describes the data collection process from the planning to the reporting stage when a project is complete.
- Section 9 updates the plan with respect to the description of Program Assessments and Standard operating Procedures.
- Section 10 outlines the DEM Assessment Processes including the program self-assessment, management system reviews and project assessment.
- Section 11 outlines the Quality Improvement process and indicates roles and responsibilities for continuous quality improvement, assessment review and assessment reporting.
- Appendix A - Organization Charts for OWR and OWM
- Appendix B - Inventory of QAPPs updated.
- Appendix C- Inventory of SOPs updated.
- Appendix F- Training Needs updated.

In 2001, DEM began to participate in the Region I sponsored Quality Roundtables. This group of Quality Managers from the states and their counterparts from Region I EPA meet to discuss Quality issues. As a result of this activity, DEM has been able to gather a wealth of information from the other states, especially New Hampshire and Maine. Many of the Standard Operating Procedures and information on assessments have been developed using the experience from these programs. DEM would like to express its appreciation to these organization for the assistance provided in revising this document, especially Malcolm Burson from Maine DEP, Vince Perelli and Bob Minicucci from New Hampshire DES and Steve DiMattei, the EPA Region I contact for Quality issues.

This document will be implemented through its quality team. Special thanks to Connie Carey, Steve DiMattei (EPA Region I), Heidi Travers, Elizabeth Scott, Barbara Morin, Cynthia Gianfrancesco, Sophia Kaczor, and Elizabeth Lopes-Duguay for their review and for providing comments that were incorporated into the final document. Maria Costa provided administrative support and was responsible for scanning older hard copies of documents into electronic format.

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**Appendices**

# 1. Introduction

The regulatory programs within the Rhode Island Department of Environmental Management are in a partnership with EPA, documented in the Performance Partnership Agreement and DEM's Annual Program Work Plan, to implement various environmental programs in Rhode Island. EPA provides the funds for many state efforts to implement those programs through assistance agreements, or grants. Recently, EPA has added a condition to those assistance agreements that specifically requires recipients to develop and implement a Quality Management Plan.

It has always been the policy of the Department to ensure that all environmental data generated and compiled is of known quality, adequate for its intended use, well documented, and is verifiable and defensible. The grant condition has prompted the Bureau of Environmental Protection to prepare this written Quality Management Plan (QMP) to formally communicate that commitment and establish a process to ensure it is met.

For purposes of this plan, environmental data include direct measurements or data generation, compilation of data from literature or electronic media, and data supporting the design, construction, and operation of environmental technology. The QMP covers all of the data generation, data collection and management activities in the Offices of Air Resources, Compliance and Inspection, Water Resources, Waste Management and Technical and Customer Assistance. The Department may expand the scope of this plan in the future to integrate the separate QMP developed by the Pesticide Management program in the Division of Agriculture. (For the purpose of this document the words Division and Office can be used interchangeably.) Other programs may be included in the plan, if needed, in the future.

This document describes the quality program that will be developed and implemented and defines the management structures that will be used in its implementation and was developed in accordance with the requirements set forth in EPA Requirements for Quality Management Plans (QA/R-2) (http://www.epa.gov/quality1/qs-docs/r2-interim-final.pdf).

# 2. Management and Organization

## A. DEM Mission Statement

The mission of the Department, working through its Bureaus and Offices is to:

1. Enhancing the high quality of life for this and future generations by protecting, managing, and restoring the Environmental Protection of the state, enhancing outdoor recreation opportunities, protecting public health, and preventing environmental degradation.

2. Guiding utilization of the state's Environmental Protection to provide for sustainable economic opportunity while sustaining our natural environment.

3. Motivating the citizens of the state to practice an environmental ethic based on an understanding of their environment, their own dependence on it, and the ways in which their actions affect it. (DEM Strategic Work Plan, 2004-2005).

The Bureau of Environmental Protection consists of the Office of Air Resources, the Office of Water Resources, the Office of Waste Management, the Office of Compliance and Inspection, and the Office of Technical and Customer Assistance.

The management team for the Bureau consists of the Assistant Director for Water Resources, the Assistant Director for Air, Waste and Compliance, and six Office Chiefs.

The Bureau regulates many diverse activities that affect the environment. Effective regulation protects public health, prevents further degradation, and supports the restoration of the environment where it has been adversely impacted by past activities. Effective regulation must include decision-making based on consistently sound data and information.

DEM has named Thomas Getz, the department Ombudsman, as the Quality Assurance (QA) Manager. DEM will take a decentralized approach in implementing the Quality Management Plan. The QA Manager will work with members from the affected Offices, i.e., the Quality Team, in implementing the DEM Quality Program.
The QA Manager will be responsible for:

- The development, revision and implementation of the QMP.
- Establishing a training program to educate staff on the Quality System and instruct staff on proper QA and QC procedures.
- The coordination of System Management Reviews and Project and Program Assessments
- Preparation of the Quality Assurance Status Report.

The program offices, through the Quality Team members, will have the responsibility for:

- The preparation of QA documents,
- Providing oversight of all QA related field and laboratory functions.
- The review of all contracts and agreements to ensure that they conform to the generally accepted QA/QC procedures and all QA/QC requirements mandated by cooperative agreements with federal agencies.
- The overall quality and integrity of all data generated within their programs.
- Coordinating the program self-assessments and project assessments.

The bureau management team, collectively, is responsible for quality through adherence to grant conditions, program policy and guidance, and through the development and adherence to Quality Assurance Project Plans (QAPPs) and Standard Operating Procedures (SOPs).

## B. DEM Quality Assurance Policy

It is the policy of the Rhode Island Department of Environmental Management that all environmental data generated and compiled is of known quality and adequate for its intended use. Pre-established acceptance performance or criteria, with all aspects of its collection documented will define data collected, and that such documentation is verifiable and defensible. This goal can be achieved by

ensuring adequate quality management steps and procedures are used throughout the entire process, from initial study planning through data usage. Data usage may include permitting, enforcement, planning and assistance activities.

DEM has historically had a decentralized approach to ensuring quality in environmental data. The many individual programs have not documented their approach to ensuring quality; however, they have been focused on meeting the conditions of grants and cooperative agreements and following the quality requirements of the program guidance. Office Chiefs, and in some cases Section Supervisors within Divisions, have had primary responsibility for implementation of their programs, including ensuring the quality of the data that is used in the decision-making process. This QMP does not directly move the Bureau from a decentralized to a centralized system but imposes a formal structure, across Divisions and programs, on how quality goals will be met. Resources used to implement the Quality System will continue to come from the programs. Quality team members from the Divisions will have joint program and quality responsibilities. Based on further evaluation and implementation, the Bureau may, or may not, elect to centralize some functions in the future.

## C. Organizational Charts

The following organizational charts are incorporated directly into this Quality Management Plan in Appendix A:

- Department of Environmental Management
- Office of Air Resources
- Office of Compliance and Inspection
- Office of Technical and Customer Assistance
- Office of Waste Management
- Office of Water Resources

## D. Management Roles, Responsibilities & Authorities for Quality System

The Assistant Director for Water Resources and the Assistant Director for Air, Waste and Compliance are ultimately responsible for developing and implementing a quality system in the Bureau of Environmental Protection. The QA Manager, however, will assist DEM in coordinating DEM's QMP efforts and will provide EPA with a contact for questions concerning the QMP.

As stated earlier, the Department has historically had a decentralized approach to ensuring quality in environmental data. Office Chiefs, and in some cases Section Supervisors within Divisions, have had primary responsibility for implementation of their programs, including ensuring the quality of the data that they base their decisions on. A brief outline of the quality-related responsibilities for different positions in the Bureau hierarchy is outlined below:

**Assistant Director for Water Resources and Assistant Director for Air, Waste and Compliance**

*Quality-Related Responsibilities:* Provide policy definition, leadership, and oversight for the quality system throughout the Bureau and serve as the overall authority for directing activities in accordance with program policy. Responsibilities, concerning quality, include:

- Serving as the final authority for resolving quality related issues,
- Advocating for the necessary training,
- Advocating for resources to support the quality approach, and
- Ensuring that the Quality Management Plan (QMP) is in place and functioning.
- Ensuring deficiencies noted in the Quality Assurance Status Report are added to the Office work plans for resolution.

Quality Assurance Manager:
Provides departmental focus for the development, revision and implementation of the QMP.

- Establishes a training program to educate staff on the Quality System and instruct staff on proper QA and QC procedures.
- Responsible for the coordination of DEM's efforts to develop and implement the QMP.
- Preparation of the Quality Assurance Status Report.

**Office Chiefs**

*Quality-Related Responsibilities:* Provides policy definition, leadership, and oversight for their respective programmatic responsibilities and serve as the authority for directing activities in accordance with program policy. Responsibilities concerning quality include ensuring:

- Resources provided to their Offices are budgeted to support the quality approach;
- Staff attend necessary training;
- Grant commitments, program requirements, and grant conditions are met; and
- The Quality Management Plan (QMP) is in place and functioning in their Office.
- The naming and supporting a representative to the Quality Team.
- That deficiencies noted in the Quality Assurance Status Report are tracked and resolved.

**Section Supervisors (actual Job Titles may vary depending on program)**
*Quality-Related Responsibilities:* Primary responsibility is coordinating staff activities to meet the duties and responsibilities of the section and meet the agreed upon outputs presented in the grant agreements. The section supervisors oversee the activities of the staff within their program and provide a program-wide focus on quality management. With respect to quality issues, the section supervisors:

- Ensure the staff is knowledgeable of current program quality policy, requirements, and guidance;
- Establishes quality policy in coordination with management;
- Serves as a quality team member between the section and EPA.
- Determines the acceptability of all QAPPs submitted for review and approval before implementation.
- Responsible for completion of the program / project assessments.

**Project Managers (typically staff-level positions where actual job titles may vary depending on program)**

*Quality-Related Responsibilities:* The project managers are responsible for:

- Ensuring a quality assurance project plan (QAPP) is provided for a specific site investigation or activity, if required;
- Establishing and implementing acceptance or performance criteria appropriate for the regulations involved during the planning of the project; (These acceptance or performance criteria will be noted in the QAPP, and will be used to define data quality requirements.)
- Ensuring the quality of the information generated meets the acceptance or performance criteria of the project throughout the implementation and assessment of the project;
- Supervising technical project staff that defines project objectives and data quality requirements, develop work plans, review data, and develop and assess standard procedures.
- Implementing any changes that were noted in the Quality Assurance Status Report.

## E. Programs That Generate or Use Environmental Data for Decision Making

- Division of Agriculture

  - Pesticide Enforcement Program – Staff may periodically conduct compliance sampling.
  - Pesticide Water Resource Program – Staff randomly collects water samples for pesticide detections.

- Office of Air Resources

Air Monitoring:

OAR conducts the following monitoring activities:

- Operates and maintains the PM2.5 and PM10 filter-based monitoring networks.
- Operates 3 continuous PM2.5 monitoring sites and 1 speciated PM2.5 monitoring site.
- Operates monitors measuring VOCs, carbonyls, metals and chromium VI at a National Air Toxics Trends Site. Directs the DOH Air Pollution Laboratory in the operation of an approved NAMS/SLAMS air-monitoring network in conformance with 40 CFR 58 and in the conduct of special studies.
- Oversees stack testing of emission sources.

In addition to implementation of the core air pollution monitoring program, OAR collects short-term samples of toxic volatile organics, particulates, or other toxic species and uses the results to analyze the impacts from particular sources or to study the air quality in particular locations.

- Emission Inventory – DEM collects emissions information on sources that emit air pollutants.

- Mobile Source Emission Data – OAR works with the Division of Motor Vehicles and analyzes data that is collected from the state vehicular emission testing program

- Office of Compliance and Inspection

    - Emergency Response- OC&I maintains a staff of Emergency Responders on call 24-hours/day, 7-days/week to respond to threats from releases of oil or hazardous materials to the environment. Emergency Responders may conduct sampling to assess a situation or characterize materials under investigation.
    - Air Compliance- OC&I's air compliance program monitors exterior lead paint removal projects and responds to complaints regarding non-compliant operations as well as responding to odor complaints associated with non-compliant or unlicensed facilities.
    - RCRA Compliance Section- RCRA inspection staff conducts compliance monitoring on regulated hazardous waste management facilities, generators, and transporters, as well as responding to complaints of improper disposal of hazardous waste. Staff may conduct sampling to characterize materials under investigation.
    - Solid Waste Compliance Section- Solid waste inspection staff conducts compliance monitoring on regulated solid waste management facilities as well as responding to complaints of improper disposal of solid waste. Staff may conduct sampling to characterize materials under investigation.
    - Water Compliance- Water compliance inspection staff conduct investigations and compliance monitoring related to discharges to water bodies. Staff may conduct sampling to characterize materials under investigation.
    - Water Compliance- ISDS compliance inspection staff conduct investigations and compliance monitoring related to discharges from individual septic disposal systems. Staff may conduct sampling to characterize materials under investigation.

- Office of Technical and Customer Assistance

    - Pollution Prevention- Staff assist businesses in investigating and evaluating opportunities to reduce pollution through product substitutions and/or process modifications. Staff may conduct sampling to characterize materials under investigation or evaluate the effectiveness of measures taken to prevent pollution.

- Office of Waste Management

    - Leaking Underground Storage Tank Assessment and Remediation- Staff oversee the investigation and clean up of properties contaminated by releases from underground storage tanks. Staff may conduct sampling to characterize materials under investigation and/or remediation.
    - State Site Remediation Program- Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials under the jurisdiction of RI state authorities. Staff may conduct sampling to characterize materials under investigation and/or remediation.
    - Brownfields Program- Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials that are proposed, or being prepared for, beneficial reuse. Staff may conduct sampling to characterize materials under investigation and/or remediation.

- RCRA Compliance Section- RCRA staff conducts compliance monitoring on regulated hazardous waste management facilities and transporters. Staff may conduct sampling to characterize materials under investigation and/or remediation.
- Solid Waste Compliance Section- Solid Waste staff conducts compliance monitoring on regulated solid waste management facilities and medical waste transporters. Staff may conduct sampling to characterize materials under investigation and/or remediation.
- Superfund Programs- Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials under the jurisdiction of the federal Superfund program. Staff may conduct sampling to characterize materials under investigation and/or remediation.

- Office of Water Resources

  - Total Maximum Daily Loading (TMDL) Program- Staff oversee the investigation of surface water bodies and develop a response strategy for impacted areas. Staff may conduct sampling to characterize materials under investigation and evaluate the effectiveness of corrective measures.
  - Ambient Water Quality Monitoring Program- Staff oversees contracts for monitoring and analysis of water quality in surface waterbodies.
  - User Fee Program – Staff conducts sampling of major RIPDES permittees to assess impacts to surface waters
  - Shellfish Area Monitoring Program - Staff conducts sampling of shellfish growing areas and potential pollution sources identified during shoreline surveys.
  - RIPDES Program – Staff may periodically conduct compliance sampling of permitted discharges to surface waters or municipal wastewater treatment facilities.
  - Wastewater Treatment Facilities Operations and Maintenance Program – Staff may periodically conduct compliance sampling of wastewater treatment facilities.
  - UIC Program – Staff may collect samples from groundwater discharge points or from groundwater monitoring wells.
  - Water Quality Certification Program – Staff may periodically conduct compliance sampling.

## F. List of Key Personnel

All key personnel for the development and implementation of the QMP are located at DEM Headquarters, 235 Promenade Street. Providence, RI 02908. Key personnel include:

- Department of Environmental Management
  - J. Michael Sullivan, Director
    Michael.Sullivan@dem.ri.gov
    (401) 222-2771

- Bureau of Environmental Protection
  - Alicia M. Good, P.E., Assistant Director for Water Resources
    alicia.good@dem.ri.gov
    (401) 222-4700 X7200

- Terrence D. Gray, P.E., Assistant Director for Air, Waste and Compliance
  terry.gray@dem.ri.gov
  (401) 222-4700 X2410

The DEM Quality team shall consist of the following personnel / positions. The Quality Team will meet on a quarterly basis to review issues of concern.

Quality Assurance Manager

- Thomas D. Getz, Ombudsman
  thomas.getz@dem.ri.gov
  (401) 222-4700 X 2417

Emergency Response Coordinator

- Michael Mulhare, P.E., Supervising Engineer
  michael.mulhare@dem.ri.gov
  (401) 222-4700 X7124

- Division of Agriculture
  - Elizabeth Lopes-Duguay, Senior Environmental Scientist
    liz.lopesduguay@dem.ri.gov
    (401) 222-2781X4510

- Office of Air Resources
  - Stephen Majkut, P.E., Chief
    steve.majkut@dem.ri.gov
    (401) 222-4700 X7010
  - Douglas McVay, Associate Supervising Engineer (Section Supervisor-Air Permitting)
    douglas.mcvay@dem.ri.gov
    (401) 222-4700 X7011
  - Barbara Morin, Supervising Environmental Scientist (Section Supervisor-Air Toxics and Attainment)
    barbara.morin@dem.ri.gov
    (401) 222-4700 X7012

- Office of Compliance and Inspection
  - Dean Albro, Chief
    Dean.Albro@dem.ri.gov
    (401) 222-4700 X7431
  - David Chopy, P.E., Supervising Engineer (Section Supervisor-Water Compliance)
    David.Chopy@dem.ri.gov
    (401) 222-4700 X7257

- Office of Technical and Customer Assistance
  - Ronald Gagnon, P.E., Chief
    ron.gagnon@dem.ri.gov
    (401) 222-4700 X7500

- Richard Enander, Associate Supervising Engineer (Section Supervisor-P2)
  renander@dem.ri.gov
  (401) 222-4700 X4411

- Office of Waste Management
  - Leo Hellested, P.E., Chief
    Leo.Hellested@dem.ri.gov
    (401) 222-2797 X 7502
  - Cynthia Gianfrancesco, Principal Environmental Scientist (Program Manager – Pre-Remedial Program and Targeted Brownfields Program)
    Cynthia.Gianfrancesco@dem.ri.gov
    (401) 222-2797 X7126
  - Sofia Kaczor, Principal Environmental Scientist - UST/LUST Programs
    Sofia.Kaczor@dem.ri.gov
    (401) 222-2797 X7121

- Office of Water Resources
  Groundwater, Wetlands Protection
  - Russell Chateauneuf, P.E., Chief
    russ.chateauneuf@dem.ri.gov
    (401) 222-4700 X7700
  - Terry Simpson, Principal Environmental Scientist (Section Supervisor-Water Quality Certification and Underground Injection Control)
    Terry.Simpson@dem.ri.gov
    (401) 222-4700 X7602

  Surface Water Protection
  - Angelo Liberti, P.E., Chief
    angelo.liberti@dem.ri.gov
    (401) 222-4700 X7225
  - Elizabeth Scott, Deputy Chief - Total Maximum Daily Loading (TMDL) Program)
    elizabeth.scott@dem.ri.gov
    (401) 222-3961 X7300
  - Eric Beck, P.E., Supervising Engineer (Section Supervisor-RIPDES)
    Eric.Beck@dem.ri.gov
    (401) 222-4700 X7202
  - Warren Towne, PE, Supervising Engineer (Section Supervisor- Wastewater Treatment Facilities)
    Warren.Towne@dem.ri.gov
    (401) 222-4700 X7247
  - Joseph Migliore, Principal Environmental Scientist (Section Supervisor - Shellfish Area Monitoring)
    Joseph.Miglior@dem.ri.gov
    (401) 222-4700 X7258
  - Connie Carey, Principal Environmental Scientist (Section Supervisor – Baseline Surfacewater Monitoring) connie.carey@dem.ri.gov
    (401) 222-4700 X7239

## G. Coordination of QA/QC Activities

The system outlined in this Plan, through the efforts of the QA Manager, will coordinate the various Office QA programs. The QMP is intended to be a dynamic document and will continue to be revised to ensure that the quality system is effectively implemented throughout the Bureau. This document will be posted on the DEM website and electronic copies of the document will be distributed to all appropriate program offices for their easy access and review. The Office Chiefs have direct access to both the program supervisors and project managers whenever specific QA problems arise. Chiefs will in turn adequately respond to identified program problems and needs (including resource aspects) and ensure their resolution. The QA manager will also coordinate regular meetings with the Quality Team to discuss specific issues that need to be resolved. Furthermore, the implementation of the Quality System may be reflected in the individual Professional Development Reviews undertaken annually with all Department senior management. This could reinforce and track the evolution of a coordinated and integrated quality system throughout the Bureau.

## H. Delegation/Contracting of Programs and Technical Activities

The Department has had a decentralized approach for ensuring the quality of environmental data and information that is generated by outside entities under delegation agreements or contracts with the Department. These scopes of work are reviewed at the individual Office overseeing the project. Office Chiefs, and in some cases Section Supervisors within Divisions, who manage the work of outside entities have had primary responsibility for ensuring the quality of the data delivered under those agreements and contracts. The degree and formality of oversight of those entities will be examined as this QMP is implemented. It is expected that the assessments and reviews employed by the QMP will apply to these situations. Furthermore, it is anticipated that the Office Chiefs will certify to the QA manager that the contracts and agreements conform to the generally accepted QA/QC procedures and requirements mandated by cooperative agreements with federal agencies.

# 3. Quality System Components

The DEM quality system provides a framework for planning, implementing, documenting, and assessing work conducted by the Bureau of Environmental Protection. The purpose of this system is to enable DEM to generate the type and quality of information required to fulfill our environmental mission.

The foundation of the quality system is management's commitment to quality and our QMP. Our quality policy reflects management philosophy on quality and stands as a guiding principle for our environmental data collection activities. It states that all personnel have responsibility for quality and with management support, will continually strive to build quality into work processes, products, and services.

Quality assurance addresses the planning of environmental projects, implementation of work activities, assessment of the process, and the results and feedback to the process. Quality control includes the scientific observations made and experimental results generated during the project.

Management provides policy definition, leadership, and oversight for the quality system. It also allocates resources to implement this quality policy.

The quality system for environmental monitoring, sampling, and measurement activities include the following components:

| Component | Status |
|---|---|
| Quality Management Plan (QMP) | QMP revised 9/05 |
| Office Policies and Standard Operating Procedures (SOPs) | Compilation ongoing, Appendix C is the current compilation of DEM SOPs. |
| Quality Planning | Ongoing |
| Quality Assurance Project Plans (QAPPs) | Appendix B is the current compilation of QAPPs |
| Program Assessment System | The QA Manager has finalized a self-assessment guidance document. The programs are scheduled to finish the first self-evaluation in March 2006. |
| Management Systems Reviews | Preliminary draft procedure developed. |
| Training Program | Training inventory completed, training goals for 2006 established. |

These principal tools will be reviewed annually to address changes in the quality system. Suggestions for changes come from staff proposals for improvements and lessons learned from Division involvement in program activities.

## A. Quality Management Plan

The QMP is an essential component of the quality system. It describes and documents the system, and is the plan used to implement the quality policy. It identifies what the Bureau does in quality management, and gives a rationale for why it is done. The QMP provides the basis for discussing changes and improvements to the quality system. All employees involved in environmental data generation activities will be required to read and be familiar with the QMP to ensure that they understand and are following the organization's quality management process. A copy of this plan will be posted on the DEM website and will be available to employees in each program for easy access to this document. Management also uses the QMP as a tool to gauge whether the quality system is being successfully implemented.

The QA Manager will be responsible for implementation of the QMP and reviewing the QMP at least annually to determine if it is up-to-date, accurately reflecting the DEM quality system, adequately ensuring quality throughout covered programs, and in compliance with current guidance and program requirements. Prior to the QMP being updated, it will be distributed to the Quality Team who will be given an opportunity to review and comment on the document. Once this review period is complete, and comments have been evaluated and addressed, the QMP will be approved by signature of the Assistant Director for Water Resources, the Assistant Director for Air, Waste, and Compliance, the QA Manager, and the Director (see Appendix I for Signature Page).

## B. Quality Planning

The mission of the Rhode Island Department of Environmental Management (DEM) is to "Enhance the quality of life for current and future generations by protecting, restoring and managing the natural resources of the state; enhancing outdoor recreational opportunities; protecting public health; and preventing environmental degradation….". In carrying out its mission, DEM relies upon many different types of data that enable it to better evaluate and measure existing environmental conditions, to identify and understand areas of concern, to assign responsibility for these areas, and to promote and enhance credible communication on environmental issues to a wide variety of audiences.

The data DEM uses must be credible, and the quality of that data must be appropriate for its intended uses. The Department, through its Quality Assurance (QA) System is moving towards a more systematic approach to the management of data and overall quality assurance issues across DEM.

Our quality goal is to conduct environmental measurements that meet the objectives of the program and/or project, which vary. To this end, we will ensure that the information generated is based on scientifically sound data and is supported by legally defensible documentation. The data quality-planning process describes the procedures developed to ensure that the environmental measurement activities conducted will be of the quality and types required to support enforcement actions. This process and its application in enforcement projects, involving both field and laboratory assistance will be described later in this document. Section 8 of the QMP outlines the process for Quality Planning at DEM.

DEM has developed procedures and guidance on how to conduct program Self-Assessments. It is the goal of DEM to require the all programs that generate environmental data to conduct these Self-Assessments every year and to report on the assessments by March 31 of each year. In this fiscal year DEM plans to train members of the Quality Team to conduct these assessments.

## C. Office Policies and Standard Operating Procedures (SOPs)

Each office has procedures, and in some cases written policies, designed to present general guidelines for planning investigations, site remediations, and collecting and developing admissible and defensible evidence in support of the environmental programs.

Offices often use SOPs developed by other environmental organizations and equipment monitoring manufacturers. The offices will identify the source of the SOPs when included in any QAPP that is developed. DEM's current inventory of Standard Operating Procedures used in the programs is located in Appendix C. In addition the Quality Manager has developed a Standard Operating Procedure for the development and approval of SOPs that will be used in the programs for new SOPs that are developed (Appendix D). This inventory and all SOPs that are in an electronic format are posted on the DEM Internet.

The DEM current listing of policies and guidance that relate to quality management issues have been inventoried and are included in Appendix E.

Management is responsible for monitoring program performance and evaluating the adequacy and completeness of the policies, typically with significant input from staff. Personnel suggesting the change or having expertise in the area typically draft suggested revisions. Management will review the draft revisions for approval before implementation.

As the compendium of these policies and Standard Operating Procedures (SOPs) is developed, a gap analysis will be performed to determine if further policies should be established. Furthermore, an analysis of the merit and feasibility of integrating these policies will be conducted. When it is necessary to develop SOPs, the Bureau will consult EPA's Guidance for the Preparation of Standard Operating Procedures (G-6) (http://www.epa.gov/quality1/qs-docs/g6-final.pdf) to develop those procedures.

## D. Quality Assurance Project Plans

A QAPP is used to describe the acceptance or performance criteria and QA/QC activities associated with any site investigation conducted, including but not limited to soil, sediment, drinking water, groundwater and surfacewater monitoring, air sampling, discharge monitoring, or site investigation and remediation projects. These may be generic to cover all planned site activities at a given facility or written for only one site-specific project. A QAPP may also be used for a special research or monitoring project with a definable beginning and end such as the study of air quality in neighborhoods around TF Green Airport. All elements of a QAPP must be addressed for such a project. Appendix B is the inventory of all DEM approved QAPPs.

Our goal is to ensure that all Quality Assurance Project plans will be reviewed based on the elements and information provided in the following guidance documents:

- EPA QA/R-5 EPA Requirements for Quality Assurance Project Plans (http://www.epa.gov/quality1/qs-docs/r5-interim-final.pdf), and,
- EPA QA/G-5 Guidance on Quality Assurance Project Plans (http://www.epa.gov/quality1/qs-docs/g5-final.pdf).
- EPA New England Compendium of Quality Assurance Project Plan Requirements and Guidance (http://www.epa.gov/region1/measure/qappcompendium.pdf)

A project manager may develop a project-specific QAPP based on a generic program QAPP. In these situations, the project manager will create a supplement to the generic QAPP that addresses the specific requirements of his/her project. The supplement will be reviewed and approved by the program supervisor and maintained in the project file. Once the project-specific QAPP is approved, the project manager is responsible for ensuring implementation of the plan in the field. Project implementation will include information required by the EPA approved QAPP, which may include the following information.

♦ Custody Documents – Includes chain-of-custody forms, receipt for sample forms, and sample tags, when necessary.

♦ Field Notes- A detailed record which may include when, where (including site maps), how, and who took each sample. The results of associated field measurements, field calibration results,

and background-monitoring readings are recorded. Other factors that might affect sample quality or interpretation of results, such as ambient temperature and climatic conditions, may also be recorded in the logbook. In addition, a photographic log maybe maintained where appropriate.

- Field Photographs – a visual record of site conditions, processes, samples and sample source.

- Standard Operating Procedures – Procedures used for routine activities associated with sampling and field and analytical measurements. The project manager is responsible for ensuring that the procedures are understood and followed in the field, and that deviation from these procedures are approved and documented.

- Data Quality Requirements and Sample Analytical Strategies – Acceptance or performance criteria that support the overall objective of the investigation or remediation project, are defined for monitoring, sampling, and analyses. The type and number of samples collected must be appropriate to achieve the level of accuracy required by the investigation or remediation. The sample preparation and laboratory analytical test methods, QC requirements, and data deliverables are approved and agreed to in writing before sampling. Data quality objectives should be developed consistent with the guidance provided in EPA's Guidance for the Data Quality Objectives Process (G-4) (http://www.epa.gov/quality1/qs-docs/g4-final.pdf).

- Reporting Requirements – This may include interim sampling reports, lab results, and a final report.

The QA Manager has developed and finalized a protocol to review projects and programs to ensure compliance with the Quality System (see Project Assessments). This protocol is currently under review.

## E. Management Systems Reviews

DEM will need to establish a process for Management Systems Review. This process will ensure that technical documents are reviewed and developed that will meet pertinent QMP standards. After the program self-assessments are analyzed, DEM will develop a Management System Review assessment. This work will begin in the late summer of 2006. The Management System Review will gauge whether the quality system is being successfully implemented and to identify opportunities for improvement. This review identifies patterns or issues that can affect project commitments or performance quality. The QA Manager and the Quality Team will select individuals to conduct an independent management systems reviews. These reviews provide an independent qualitative assessment to determine whether the program quality system, policies, procedures, and practices adequately address generating the type and quality of data required. Those reviews are predicated on DEM staff receiving training in this discipline. DEM staff needs to be trained in conducting project assessments and Management System Reviews.

## F. Program Assessments

Assessments will be initially conducted at the program level to determine conformance with department procedures, quality assurance project plans, standard operating procedures (SOPs) and other applicable requirements. Other objectives of assessments are to determine the accuracy of data collection and management systems, identify opportunities for program improvements, and to verify the effectiveness of Department programs. Other important benefits of assessing are cross training, assurance that policies and procedures are current and being followed by staff, and continuous improvement.

The Guidance for Annual Self-Assessments (Appendix F) will be used by the agency to conduct program assessments. This assessment is applicable to all programs listed in Appendix G. The Quality Team member of the Office will coordinate the self-assessment activities. A program may specify additional procedures or requirements for conducting assessments within that organization. Starting in FY 2007, the Quality Manager and the Assistant Directors in the Bureau of Environmental Protection will identify and prioritize assessment issues, develop annual assessment plans, and ensure that assessments conform to this procedure.

To accomplish this, every DEM staff member must understand how his or her activities affect data quality issues, and all staff must know what they have to do to help produce quality data. This is accomplished by having a central documented plan, which is periodically reviewed and updated so that the overall data QA System continuously improves. In addition, the Quality Manager will develop a short module to inform staff about the DEM Quality Management System.

## G. Project Assessments

From time to time, the section supervisors, or their designee, will perform project assessments. DEM Quality Team members and other appropriate members of staff will be trained in the self-assessment procedures. Region I has been requested to assist DEM in this training. Assessments ultimately will be based on the following:

Assessments of QAPPs – The program manager or designee will assess completed projects to evaluate the adequacy of facilities, equipment, supplies, personnel, and existing procedures to meet project objectives based on a schedule developed by the Quality Manager and the Quality Team. Findings of the assessment, including any deficiencies, inadequacies, or systematic problems will be forwarded to the Quality Manager and discussed with the project management. Department senior management, when appropriate, will collectively decide how to respond to the findings.

Quality Control Indicators - During the project, members may use quality control indicators to identify problems with sampling and/or analytical procedures and to highlight anomalous results. Quality control indicators can include blanks, standard reference materials, QC check samples, replicates, spikes, and alternative methods. Problems that are identified are documented in the project file and should be discussed with the program supervisor. They may decide how to respond to the problems together, or after consultation with the Chief and/or appropriate Assistant Director.

Data Assessments- The project team must assess data to determine its usability in meeting the project goals and objectives. This will be done based on the data quality objectives of the project and the data deliverables provided as specified in the QAPP for the investigation or remediation project. The

project assessment must ensure that data is being assessed correctly, at a minimum in accordance with the guidelines specified in Section 8 (B) (vi.) of the QMP.

When a project is concluded, the project team must evaluate the work product for completeness, accuracy, and appropriateness to meet the project objectives. The procedures used and the documents generated are evaluated for adherence to policies and standard operating procedures. The QA Manager in collaboration with the Quality Team, will also develop a protocol to review projects and programs to ensure compliance with the Quality System.

## H. Quality System Training Program

The QA Manager, with collaboration from the Quality Team, is responsible for developing a training program to inform and educate staff on the QMP and the QA system. Each office will be responsible for ensuring their staff is appropriately trained. The QA Manager will coordinate these activities to ensue that training resources are being efficiently used. All programs were queried with respect to their training needs for 2006. Appendix H is a listing of their training needs.

In October 2004, the DEM QA Manager attended an EPA sponsored training program in New Hampshire and attended a number of sessions that dealt with developing and conducting assessments. He also attended a train the trainer session on how to develop training courses. Based on this material, the QA Manager will develop training modules to train members of the Quality Team on assessment procedures. In addition, the Quality Manager will develop a brief training module on the DEM Quality Management System. In addition, the Quality Manager will develop a brief overview of the DEM Quality System for staff. DEM may also request EPA Region I assistance in this endeavor.

# 4. Personnel Qualification and Training

## A. Personnel Qualifications

Assurance that all staff members are qualified and meet the required job specifications, DEM must follow and adhere to State's and Department's *Personnel Rules and Regulation,* as well as to union contracts. Personnel qualifications are established by the Position Classification Plan, which describes the job specifications and the education and /or experience necessary to fill that position. All job applications are reviewed by the Department's Office of Human Resource to ensure applicants meet the minimum job requirements. Managers within the program, interview qualified applicants to assess their compatibility with that program.

## B. Commitment to Training

In order to meet the Department's Commitment to Quality (outlined in Chapter 1 previously), DEM will provide adequate training to key personnel in the applicable policies, procedures, and requirements of maintaining a quality system at all levels in the Bureau. Training will at least be consistent with the role of the individual in the overall quality system and may be more comprehensive.

## C. Overall Description of Personnel Training

The Bureau does not currently have a formal, comprehensive training program on quality or quality systems. The Divisions currently arrange training primarily on an ad hoc basis dependent on need, funding and availability. Overall, availability of training is heavily dependent on the availability of courses from EPA, Interstate Organizations (NEWMOA, NEIWPCC, NESCAUM, ASTSWMO, etc.), and, to a much lesser extent, private training companies.

The following is a sampling of courses that have been coordinated through some of these organizations:

**ASTSWMO**
RCRA Info National User Conference
Natural Resource Damage Workshop

**EPA**
Sampling for Hazardous Materials
Environmental Risk Assessment
Personnel Protection and Safety
Passive Diffusion Sampling Training
California Puff Model Training Course
National Association of Remedial Project Managers
RCRA State Authorization Workshop
Enforcement and Compliance Workshop
NPDES Permit Writers Course
EPA / NSSP Water Quality Monitoring Workshop
Pesticide Regulatory Educational Program (Prep Courses)
Pesticide Inspector In Residence training (PIRT)
EPA Region-I Pesticide Inspectors Training Workshop

**NEEP**
Field Investigations training course

**NESCAUM**
Air Toxics workshop (co-sponsored with EPA)
Inspection of Gas Control Devices training
Air Pollution Meteorology
Introduction to Permitting
Smoke School
Ambient Air Monitoring
Dispersion Modeling Applications

**NEWMOA**
Annual Training and Technology Transfer Conference
Advanced Hazardous Waste Inspector training conference

**NEIWPCC**
Non-point Source Conference
Water Quality Standards Academy

**OTC**
Practical pathways to Energy and Environmental Coordination in the New England/Mid-Atlantic States

**SERC**
National Conference on Above Ground Storage Tanks

The primary mechanism for training staff on quality issues in our programs is through on-the-job training and informal education and mentoring from more experienced and/or senior staff members.

There may be a need to develop a more coordinated training program to discuss quality issues across Bureau programs. As this QMP is initially implemented and evaluated, the need for training will be closely watched. It is expected that we will develop a short training session on the QMP itself as it is finalized. When developing training, DEM intends to consider the guidance provided in EPA's Guidance for Developing a Quality Assurance Training Program (G-10) (http://www.epa.gov/quality1/train.html ) and incorporate relevant and appropriate sections.

## D. Roles, Responsibilities and Authorities for Assessing and Allocating Training

As stated earlier, the Department has historically had a decentralized approach to ensuring quality in environmental data including training staff. Office Chiefs, and in some cases Section Supervisors within Divisions, have had primary responsibility for implementation of their programs, including ensuring adequate training of staff. The establishment of the Department's Training Committee has significantly supplemented these efforts. The training committee surveys employees and managers both through stand-alone surveys and exit questionnaires at the end of sessions to determine training needs and desires and then works to arrange that training session.

The DEM training committee has presented or coordinated the following courses: Witness Preparation, Stress Management, Quality Customer Service, Working with the Media, Open Meetings and Public Records Laws, Myers-Briggs Training, Workplace Violence Training, various computer training courses, Professional Feedback, Teambuilding, Diversity Training, and Time Management.

The training attended by DEM employees, both internal training sponsored by DEM and training provided by outside organizations, is tracked on a monthly basis by the Office of Human Resources (OHR) as part of the implementation of DEM's Equal Employment Opportunity (EEO) Plan. Forms are sent to each Division Chief on a monthly basis and completed forms are returned to OHR for tracking.

# 5. Procurement of Items and Services

Procurement ranges from general supplies to highly sophisticated scientific equipment that directly affects the quality of environmental measurements. Within the Bureau, identified equipment needs are

submitted to Chiefs and/or Assistant Directors who evaluate, prioritize, and make decisions on items for proposed procurement in accordance with the need for the materials, the program budget, grant requirements and State purchasing system requirements. The Office of Management Services reviews each proposed purchase to check consistency with the Department's budget, grant requirements and State purchasing systems.

## A. Description of State Procurement System

The Department of Environmental Management operates under statutory authority granted under the State purchasing law, chapter 37-2. This procurement statute, administered by the purchasing division in the Department of Administration, sets the standards for all state agencies for the procurement of goods and services. The legislation and regulations prohibit state agency administrators from committing funds or entering into agreements without the express written authorization of the Chief Purchasing Officer. Every State Agency Director must be familiar with the regulations and must indoctrinate personnel in their implementation.

DEM can make purchases under the master price agreement goods and services without going to a formal bid process. Departments can also make purchases of up to $2,500 within the department. All purchases over $1,000 must have three written vendor quotations and be approved by DEM's Chief of Management Services. The Chief of the division can directly authorize purchases of less than $250. Purchases over $250 to $1,000 need three telephonic quotations before a DPO can be issued.

In addition, any procurement over $5,000 needs state budget Officer approval before going to purchasing. Purchase of Technology related items exceeding $5,000 also require budget approval and any procurement of personnel and professional services require the state budget officer approval.

All invitations for bids and requests for Proposals (RFP) are governed by sections 42-11 and 37-2 of the general laws of RI. The law establishes requirements for vendors who wish to provide goods and services to the state and pertains both to suppliers of goods and suppliers of contracted services.

The Division of Purchasing can also delegate authority to purchase to a department. Delegation allows the department to directly negotiate an agreement or contract with the federal government, other state or quasi state agencies or that the department has adequately addressed the issue of sole/single source procurement. All contracts with Universities or state colleges must use the sole source justification before a purchase order is issued. All other contracts must follow a standard requisition and proposal and will be issued a purchase order by the State Controller after approval of Purchasing.

All Technical proposals go through a review committee at the State division of Purchasing.

## B. Contracts

An Office may individually, or in coordination with other Offices, recommend that the Department (and the State) contract for certain work elements subject to the process outlined above. Examples of major contracts administered in the Bureau include:

- Emergency Response Services Contract (Office of Compliance and Inspection)

- Analytical Laboratory Services Contract (Office of Waste Management)
- Technical Assistance Contract Services (Office of Waste Management)
- Contract with University of Rhode Island on Pollution Prevention Assistance (Office of Technical and Customer Assistance)
- Contract with University of Rhode Island on Small Business Assistance (Office of Technical and Customer Assistance)
- Agreement with Department of Health Laboratory to analyze air samples (Office of Air Resources)
- Agreement with Department of Health Laboratory to analyze water samples (Office of Water Resources)
- Agreement with URI on Ambient Water Quality Monitoring (Office of Water Resources)
- Agreement with USGS on Ambient Water Quality Monitoring (Office of Water Resources)

The Department of Environmental Management does not have its own laboratory and is almost completely reliant on the Department of Health lab and contract laboratories for analysis of samples. Laboratories are required to follow specific procedures outlined in applicable regulations, policies and/or standard operating procedures when analyzing these samples. These requirements often directly reference EPA protocols.

This also includes analysis of split samples taken by DEM staff during inspections, investigations, or remediation.

When warranted, special analytical services and criteria, including data quality consistent with EPA's Contract Laboratory Program (CLP) can be specifically requested of a contract laboratory.

## C. Ensuring the Quality of Items Purchased

Needs are identified and submitted to Chiefs and/or Assistant Directors who review, prioritize, and decide on the items for proposed procurement. The Office of Management Services reviews each proposed purchase to check consistency with the Department's budget, grant requirements and State purchasing systems. Once an item is approved and purchased, it is delivered to the program that initially submitted the request and checked against their needs and expectations. The equipment is then operated and maintained by that program, or their designee.

All Invitations for Bids (IFB), Requests for Proposal (RFP) and extramural agreements or contracts for goods or services, except contract between state agencies, will be governed by the provisions of the Rhode Island General Laws (RIGL) § 42 - 11, entitled Department of Administration and § 37-2, entitled State Purchases. These laws set requirements for vendors who wish to provide goods and services to the state and pertain both to suppliers of goods and suppliers of contracted services. Equipment is purchased in several ways. For many items, especially equipment and supplies such as office supplies, that are routinely and frequently bought by state agencies, vendors bid on the contract and the selected vendor(s) enter into master contracts for a period of time. State Agencies must purchase supplies from those vendors. For all other purchases, state agencies must follow the state bid process.

## D. Ensuring the Quality of Work from Pass-Through Agreements, Grants, MOUs, etc.

As stated earlier, the Department has historically had a decentralized approach to ensuring quality in environmental data, including data generated by outside entities under delegation agreements or contracts with the Department for certain scopes of work. Office Chiefs, and in some cases Section Supervisors within Divisions, overseeing the work of that outside entity, be it a consultant, contractor, citizen group or non-governmental organization, have had primarily responsibility for ensuring the quality of the data delivered under those agreements and contracts. The degree and formality of oversight of those entities will be examined as this QMP is implemented but it is expected that the assessments and reviews defined later in this Plan will apply to these situations.

All Invitations for Bids (IFB), Requests for Proposal (RFP) and extramural agreements or contracts for pass-through agreements for services, except contract between state agencies, will be governed by the provisions of the Rhode Island General Laws (RIGL) § 42 - 11, entitled Department of Administration and § 37-2, entitled State Purchases. These set requirements for vendors who wish to provide goods and services to the state and pertain both to suppliers of goods and suppliers of contracted services, include those contracted for pass-through services.

The Department of Administration Office of State Purchase and State Property is charged with the procurement of services. All quality control is the responsibility of the State Purchasing Office, although this Office relies heavily on input and comments from the initiating agency.

For analytical laboratory services, guidelines have been developed by the US EPA, which describes the minimum requirements of facilities, equipment, and personnel that must be met to conduct chemical and microbiological analysis for compliance monitoring.

QA/QC provisions will be made a requirement of every IFB, RFP or any contract for goods or services, which will involve the creation, evaluation, or analysis of environmental data.

Proposals received in response to an IFB or RFP will be evaluated on the ability of the proposer to meet the established QA/QC requirements. No agreement will be entered into when the proposer or cooperating entity cannot meet the QA/QC provisions. QA/QC requirements will be made a provision of all contracts, MOUs, MOAs, and other final agreements, as appropriate. The project manager, under the oversight of the program supervisor, will monitor all work performed under a contract, MOU, MOA or other agreement to ensure that all QA/QC provisions are satisfied. Payment for goods and services will not be made when established QA/QC provisions have not been met.

# 6. Documentation and Records

## A. Records Maintained by the Regulatory Programs

### i. Background

Each program within DEM shall maintain a document and records system to suit its particular circumstances that complies with all applicable requirements. The system shall produce unequivocal, accurate records that document all program activities. In general, the DEM program that generated the

data, will retain it. The data are usually kept in the site/case file or electronic database, including spreadsheets.

The regulatory programs within DEM rely on many types of information to make decisions. The entire process is documented and maintained through the administrative files managed by each program. Examples of the types of records and documents stored and maintained in those files are: records of complaints filed with the Department, custody documents, field notes, photographs, internal memoranda, field investigation and complaint response reports, correspondence both to and from the Department, site plans, sampling and investigation plans, site remediation plans, results of sample analysis, site-specific and/or project-specific quality assurance and quality control documents, and reports.

Files are typically maintained in the area adjacent to the various programs throughout their office space. Some files are stored in the Department's office-building basement, typically based on space constraints in the office space. Records must be kept in such a way that they can be retrieved. Each program will determine its own filing system, but ease of retrieval must be the goal. This applies to both paper and electronic files. If security is an issue, tools such as locks and passwords should be used. Hiding files is not proper security, and is not allowed. Keeping needless multiple copies of data is discouraged in the interest of saving space and paper. In general, each program should only have one copy of any data set.

**ii. Record Management Policy**

The Department has developed a records management policy. This policy:

- Defines the records management responsibility of both management and employees throughout the agency.
- Defines what constitutes an official record.
- Establishes a clear policy for retention of records, which should address creation / collection, record maintenance and use and record disposition, i.e., storage, archiving and destruction of departmental records.
- Defines record retention schedules and protocols for the destruction of obsolete records.
- Establishes a training protocol that will be used to disseminate information and train designated divisional personnel in the management of records according to the DEM.

The DEM Records Management Policy is located on the following website: http://www.dem.ri.gov/programs/ombuds/pdf/records.pdf

**iii. Record Generation Procedure**

DEM collects and processes data, generates and reviews documents in its course of normal business practices. Where applicable, DEM Offices should develop procedures for records that include the following:

a. The records shall clearly indicate the date of the field observation, sample collection, sample preparation, equipment calibration or testing, and other related activities.
b. The records shall include the identity of personnel involved in making observations, collecting field data, sampling, preparation, calibration, or testing.
c. The record-keeping system shall facilitate the retrieval of all working files and archived records for inspection and verification purposes.

d. Documentation entries shall be signed or initialed by responsible staff. The reason for the signature or initials shall be clearly indicated in the records such as "sampled by", "prepared by", or "reviewed by".
e. All generated data except those that are generated by automated data collection systems, shall be recorded directly, promptly, and legibly in permanent ink.
f. Entries in records shall not be obliterated by methods such as erasure, overwritten files, or markings. All corrections to record-keeping errors shall be made by one line marked through the error and initialed.

These criteria also shall apply to electronically maintained and generated records, where applicable.

## B. Key QA-Related Documents

The quality system for environmental monitoring, sampling, and measurement activities include the following components:

- Quality Management Plan (QMP)-Prepared and maintained by Quality Assurance Manager, and posted on the DEM website at: http://www.dem.ri.gov/pubs/qmp2003.pdf
- Office Policies and Standard Operating Procedures (SOPs)-Prepared and maintained by Office Chief and Section Supervisors and provided to Assistant Directors and appropriate project managers. Copies of SOP's located on the DEM website at: http://www.dem.ri.gov/pubs/data.htm
- Quality Assurance Project Plans (QAPPs), Sampling Plans and Work Plans-Prepared and maintained by project managers in the project file. An inventory of the QAPPs and electronic copies of the documents are located on the DEM website located at: http://www.dem.ri.gov/pubs/data.htm#sops
- Project Assessments-Prepared under the direction of the Office Chief and/or project or program manager. The Assessment report will document the assessment process, findings, and recommendations. Copies of this report should be provided to the appropriate Assistant Director and Office Chief, Quality Manager and should be maintained in the project file.
- Management Systems Reviews- Prepared under the direction of, and maintained by, the Quality Assurance Manager and./or the Assistant Directors and provided to the Director and each Office. The assessment of the management system review should be a written report documenting the review process, findings, and recommendations. Copies of this report should be provided to the appropriate Assistant Directors, should be considered in the annual review of the QMP, and should be maintained in the quality system files by the QA manager.

## C. Quality System Documents & Document Control

All controlled documents (i.e., those covered under the document control aspect of the DEM Quality System) related to DEM's quality system, including this QMP, will be posted on DEM's Internet websites, if available in electronic format. Controlled documents typically include the following:

1) The DEM QMP;
2) Various QA-related Guidance Documents;
3) All QAPPs; and
4) All other monitoring, sampling or analysis plans, and SOPs developed under the QMP.

The reports of programs' annual reviews are not considered controlled documents, and therefore will not be posted on the DEM Internet website.

As experience and circumstances dictate, additional documents or classes of documents or records may be added to the list of controlled documents. Decisions regarding posting documents on the Intranet or Internet will be at the discretion of the QA Manager and the QA Team.

After drafting by program personnel, with assistance as needed by members of the QA Team, all controlled documents must be approved by the Office Chief or designee, and submitted to the QA Manager before use. The Office Chief or designee, and if necessary, the USEPA must approve the document when it is updated. The Program Manager will distribute the document after approval ensuring a revised document is sent to the Quality Manager. Appropriate staff distribution lists should be documented and maintained. The QA Manager has the responsibility of ensuring that the documents are posted on DEM's Internet website. Electronic distribution is encouraged. All previous, outdated versions of the document will be discarded, except that the QA Manager will retain one electronic or hardcopy of all obsolete documents for archive purposes. It may also be appropriate for a copy of the previous documents to be kept in relevant project files, especially if it is needed to justify and / or clarify past sampling results.

The Program Manager also has the responsibility for ensuring that their staff uses the most recent documents. Obsolete documents must be removed and destroyed, except for the single copy kept by the QA Manager. Electronic document control is very useful in this regard; it should be used whenever possible.

All controlled documents will be marked with a revision date, and version number using a footer at the bottom of each page of the document.

The QA Manager will retain copies of the annual QA System Status Reports and of the programs' annual reports. The QA Status Reports will ultimately be posted on the DEM Intranet site.

The DEM record management policy details the elements of a record recovery plan. The policy outlines the procedures the department should follow in the event there is a disaster that would entail the significant loss of records. This plan is outlined in Appendix H and H1 of this document.

## D. Document Storage

DEM retains its' records in files that are maintained by the individual Offices and programs. Those Offices and programs have the discretion to archive files, or in some cases, dispose files based on space constraints and their own standard operating procedures. Findings of assessments and chain-of-custody forms are maintained in the project files. As stated earlier, in some Offices, a file management system includes an inventory of documents, and provides a check-in/check-out and file location information.

A unique identification case code is being developed as part of a comprehensive computerized permit tracking system. It is expected that this system may lead to a consolidated file system in the future.

Custody tags, custody records, field notes, and analytical records are maintained in project files. The Project manager is responsible for assuring that field and analytical records are in the project file.

### E. Confidentiality Policy and Access to Public Records

Section 38-2-3 of the Rhode Island General Laws outlines the requirements for maintenance of, and access to, public records. The law can be reviewed on-line at http://www.rilin.state.ri.us/Statutes/TITLE38/INDEX.HTM.

### F. Roles, Responsibilities and Authorities for Maintaining Records

Office Chiefs are responsible for developing standard operating procedures for the retention of records maintained in the individual Offices and programs. Draft retention schedules have been developed for all Offices in the Bureau of Environmental Protection and submitted to the Secretary of State for approval. Once the retention schedules are approved, the frequency for archiving files or disposing of files will be established.

## 7. Computer Hardware and Software

### A. Hardware And Software Acquisition

The Department has historically had a decentralized approach to purchasing computer equipment, instituting software and developing databases. All this significantly changed, however, when DEM committed to the development and implementation of a multi-media, comprehensive permit and information tracking system. Now, information technology needs are identified and submitted to Chiefs and/or Assistant Directors who review, prioritize, and evaluate the proposals. Each proposal must also be reviewed by the Information Management Unit to ensure consistency and compatibility with Department's systems. The Office of Management Services also reviews these proposals to check consistency with the Department's budget, grant requirements and State purchasing systems. Once purchased, Office Chiefs, and in some cases Section Supervisors within Divisions, must work with staff from the Information Management Unit to install, develop and/or implementation the items.

### B. Network Management, Data Back Up, Data Recovery Procedures, And Virus Protection

There are specific operating procedures in place to help minimize the loss of key electronic data across the many important databases throughout the DEM. These procedures include how frequently the back up functions should be performed and how the back up tapes and other data retrieval methods are to be handled, labeled, and stored, both on-site and off-site, all in an effort to have, within a worse case scenario, no more than one work day's worth of data loss. DEM has a multi-tiered approach to disaster recovery for data systems, including contingencies for both hardware and software failures due to power interruption and other scenarios. Finally, DEM staff maintains aggressive computer virus and SPAM protection programs (utilizing the most up-to-date software) in order to keep all machines (servers, desktops, and laptops, and peripheral equipment) used by over 500 users, operating smoothly and safely and ensuring that key data and systems remain uncorrupted.

## C. Disaster Recovery

The Rhode Island Department of Environmental Management is implementing a storage area network (SAN) that will provide the agency with disaster recovery capabilities and also provide the foundation for the continuity of operations. The SAN technology is an EMC product that is compatible with the configuration recently selected by the Department of Health (DOH) and awarded to EMC for their disaster recovery system. The DEM system would be configured to be compatible with the DOH system and would also allow data to be more easily shared between the agencies in the future if so desired. The DEM, like the DOH, requires certain critical applications to be available in the event of an act of terrorism. Critical applications running at the DEM in Providence are required to replicate data at an offsite location in the event of a disaster.

## D. DEM Standards and Criteria

Since each proposal must also be reviewed by the Information Management Unit to ensure consistency and compatibility with Department's systems, they have established a set of standards and criteria for purchases of equipment related to information management and technology.

Minimum standards for desktop computers and laptops require at least a Pentium microprocessor with speed greater than 400 MHz, at least 64 MB RAM, 4 GB hard drive capacity, a CD Drive, super VGA 800 X 600 video, a 15" monitor, a PCI bus and a network interface. There is also a list of software supported by the State Office of Libraries and Information Services, which includes the Windows 95 and Windows 2000 operating systems (not Windows 98 or ME). Our permit streamlining and information tracking system will use an Oracle enterprise system.

## E Assessment of Databases

DEM and its' contractor, KPMG, conducted a comprehensive assessment of all databases used in the regulatory programs as part of the development of the permit and information tracking system. The findings of this evaluation are outlined in a comprehensive report titled "Permit Application Process Streamlining Study", Final Report, and July 30, 1997. This report is maintained in the Information Management Unit Office at DEM. The results of this analysis were used to evaluate the workflow in these programs and serve as a basis for the design of a more robust, multi-program system. Many of these databases are being integrated into, and replaced by, the comprehensive system under development by Kyran Associates, under contract to DEM. DEM is in the process of initiating the permit-tracking module and it is expected to be operational in FY 2006.

We are currently purchasing and implementing the EQuIS system, to store environmental data in the waste management and site remediation programs. Based on the experience with the waste management and site remediation programs, DEM may upgrade to an enterprise version of this software available to all regulatory programs. Any data system that is used for the storage of environmental data will be compatible with the central permit and information tracking system.

## F. Maintenance of Data Integrity

The maintenance of data integrity currently remains a decentralized task for now. Office Chiefs or their designees have the primary responsibility for ensuring data integrity within their programs. These responsibilities will likely shift, at least partially, to the MIS unit as the comprehensive permit streamlining system is installed. At a minimum, policies and procedures for ensuring data integrity must be developed and implemented.

# 8. Planning

## A. Commitment to Systematic Planning

Planning and implementing environmental data operations must be done in a systematic way in order to ensure that data or information collected are of needed and expected quality for their desired use. Following such a process helps to ensure the ultimate success of any individual environmental data operation. Included in this chapter is guidance on processes that program managers must follow before and during data gathering or analysis.

Specifically, Chapter 8 presents an overview of the steps involved in the planning and implementation aspects of DEM's Quality System. It also provides detailed descriptions on how program staff should address:

i. Data quality objectives (DQOs), including when documents such as QAPPs are needed (Section 8.Bi);
ii. Sampling (Section 8.Bii);
iii. Field testing (Section 8.Biii);
iv. Split Samples (Section 8.Biv);
v. Analysis of Samples (Section 8.Bv)
vi. Data Assessment and Comparison of Results Against Established Criteria (Section 8.Bvi);
vii. Environmental Condition Description and Data (Section 8.Bvii);
viii. Review and Validation of Data (Section 8.Bviii)
ix. Reporting of Results (Section 8.B.ix)

In addition to planned and long-term routine environmental data operations, there are also instances where the immediate need for a data operation arises from an unplanned event or emergency situation. These events prevent DEM from meeting the requirements of the formal systematic planning process and the development and approval of QAPPs and similar internal documents as described below. Staff shall use their best judgment in determining the flexibility needed from the requirements of the following sections in these instances, and document the decision in a memo to the file for that data operation.

The planning process will be primarily driven by the program assessments along with management system reviews. They will be conducted in conjunction with the review and update of program Work Plans and negotiation of the Performance Partnership Agreement. The Management System Review

will gauge whether the quality system is being successfully implemented and to identify opportunities for improvement. These reviews provide an independent qualitative assessment to determine whether the program quality system, policies, procedures, and practices adequately address generating the type and quality of data required.

The second part of this chapter will address the development of Quality Assurance Project Plans.

## B. Systematic Planning Process

The primary DEM documents used as planning inputs to the overall system are: DEM Quality Management Plan; the various QAPPs already in place, approved SOPs; department-wide and office/division-wide work plans; budget documents; the Performance Partnership Agreement and Performance Partnership Grant, and various Cooperative Agreements with USEPA New England, and state, and federal rules and regulations. The key staff in the area of planning and implementing quality processes is the program managers and the project managers that a program manager assigns to complete individual tasks.

The quality planning steps listed below apply to many work tasks, especially writing new SOPs, QAPPs and planning new work.

1. Identify (and involve) an individual project manager. Other parties must also be identified and involved as appropriate, such as the sponsoring organization (if apart from DEM) and its responsible officials, DEM project personnel, and other stakeholders such as legislators or other government agencies, scientific experts, community activists, etc. The intent is to identify all customers for the data and all suppliers of the data. The program manager is responsible for this step.

2. Describe the project goal, objectives, and questions and issues to be addressed in writing and communicate them to the parties identified in step

3. Consider the potential uses of the data. The project manager is responsible for this step; the program manager reviews and approves it.

4. Identify the project schedule, required resources (including budget), milestones, and any applicable requirements (e.g., regulatory and contractual requirements). The project manager prepares this for the program manager's approval.

5. Identify the type and quantity of data needed and how the data will be used to support the project's objectives, and communicate this to relevant parties. This is the program manager's responsibility, but should be a collaborative process among parties identified in step 1. The data must meet the needs of the intended audience (*i.e.,* its "customers"). This is not to presuppose what the data will show but rather to ensure that the questions that need to be answered can be answered with the data to be gathered. Also, this step can identify when work is not necessary – if there are no customers for the data, then the program manager should consider putting the resources to other uses.

6. Identify the performance criteria for measuring data quality, including any statistical methods proposed, and ensure that relevant parties understand the criteria. This is the program manager's responsibility, but should be a collaborative process among parties identified in Step 1.

7. Identify the QA/QC activities necessary to assess the quality performance criteria (*e.g.,* QC samples for both the field and laboratory, assessments, technical assessments, performance evaluations, etc.) and ensure that relevant parties understand them. This is the project manager's responsibility, although he/she should consult with laboratory or other parties as needed.

8. Determine how, when, and where the data will be obtained (including existing data) and identify any constraints on data collection, and document these in writing. This is the project manager's responsibility. The use of existing data is strongly encouraged, provided its quality is known and is appropriate for the project; new data should be used to fill gaps in existing data or to determine if the situation described by the existing data has changed. When new data is to be generated, the sampling and analysis procedures must be documented. Design of a sampling and analysis program must explicitly include how it is anticipated that the program will meet the DQOs.

9. Consider whether it is appropriate to evaluate and qualify data from non-DEM sources, especially data gathered or analyzed by contractors, volunteers or other organizations such as universities or other research organizations. The project and program managers share this responsibility and should document their decisions. The QA Team and DEM management must be involved as necessary to ensure proper relationships with the outside parties. This issue must receive special attention from the project and program managers to ensure that this class of data is usable and defensible. As noted in other chapters of this QMP, training, procurement of services, record keeping, and assessment and corrective actions are all areas that must be specifically addressed. When volunteers are used, training and oversight of the volunteers should be a focus. Volunteers are an enormous resource to DEM, but program managers must ensure that volunteer-generated data remains useful to the program and not be vulnerable to criticism by potential data reviewers.

### i. Data Quality Objectives

Before any sampling, monitoring, or testing is conducted, the program team members must determine, document, and communicate data quality objectives (DQOs) to the relevant program staff, participating organizations, and laboratory staff (EPA document G-4, *Guidance on Data Quality Objectives*). All sampling, testing, and recording of environmental data is done for a purpose. Data is not gathered for its own sake. The procedures used for the effort must be appropriate for the use of the data. The purpose of the sampling or testing must be recorded.

In order to determine DQOs, program managers must consider and document decisions regarding the following:
1) What decisions will be made using this data;
2) What is to be communicated by using this data;
3) Will a prospective decision remain the same regardless of what data the shows; and
4) If there is nothing to be communicated by this data, is it necessary to gather the particular data.

DQOs should be discussed with program staff, participating organizations, and laboratory staff so that methods and detection levels can be agreed upon prior to sampling. The laboratory should also be included in any discussion of time frame for sampling and numbers of samples so that laboratory capacity will be available to handle the influx of samples from a large project. These steps are imperative to assure the reliability of the data.

It may be necessary to develop a QAPP, which will be prepared in accordance with this QMP and with *USEPA Region 1 - New England Compendium of Quality Assurance Project Plan Requirements and Guidance, October 1999, Final,* or later edition, and *USEPA Requirements for Quality Assurance Project Plans, QA/R-5, March 2001,* or later edition.

### ii. Sampling

Sampling is the collection of material to be tested or examined. The object of any DEM sample collection effort is to generate data that can be communicated and used to support DEM decisions and actions.

When sampling activities are necessary, they are focused toward meeting the regulatory and technical requirements defined during planning. Sample collection is designed to answer questions such as:

- What are the appropriate test methods to be used? EPA's ESC Analytical Test Methods Collection (http://www.epa.gov/reg3esd1/oasqlib/methods.htm) provides excellent information on EPA approved test methods
- How does the material compare to a regulatory threshold?
- Is a component/condition present?
- Are there trends or hot spots?
- The sampling activities typically require:
- Coordinating field activities with laboratory activities.
- Maintaining sample integrity.
- Focusing on regulatory and program defined data quality requirements.

Planning activities should address these issues.

Each program manager is responsible for ensuring that sampling activities are defined, controlled to the extent required, verified, and documented. Written sampling procedures must be followed in all instances. Wherever feasible, sampling procedures written by others, such as *Standard Methods for the Examination of Water and Wastewater*, or various USEPA guidance documents, should be included or reference in the procedures. In those cases, the programs are responsible for ensuring the most up-to-date, approved edition is used. The written procedure must be a stand-alone document sufficient to allow staff to do the work to the required quality standard.

Where sampling procedures written by others are not available, the program manager must ensure that a program-specific procedure is produced and made available to staff. Existing procedures for similar testing should be used as models whenever possible. The program manager prepares, and has responsibility for, the procedure. The QA Manager and Quality Team are available to assist with developing the procedure. The program manager reviews and approves the procedure.

The sampling procedure to be used must be reviewed and agreed upon before leaving for the sampling trip. This is necessary to avoid confusion in general, but especially to ensure that proper sampling containers and equipment are taken. When samples are to be returned to the laboratory, it is recommended to check with the laboratory's personnel before going on the sampling trip.

When deciding what procedure to use for any sampling effort, the following considerations must be factored in:

a) If the data may be used to support an enforcement case, documentation and adherence to procedures becomes even more important.
b) Sampling personnel must be trained in the use of the equipment, and records of the training may be kept if required.
c) Quality Assurance/Quality Control steps necessary to meet the DQOs must be established.
d) If the location is being sampled for the first time, be certain to record the location and mark it in the field as necessary. Whenever possible, sample locations should be recorded using the Global Positioning System (GPS).
e) When samples are to be taken at the same location again, be certain that the location is marked and accessible, or recorded using GPS. Careful notes should be taken to allow others to find the location.
f) How the samples will be transported to the testing or examination location must be established.
g) If other agencies or parties will be taking split samples, appropriate arrangements must be made. DEM will give these other parties full cooperation.
h) If people living near the sampling location, or local authorities, are interested in the sampling effort, the program manager must make appropriate arrangements for communications with any affected parties and the public. The decision regarding such communications should be recorded, and a log maintained for all communications.

When others do sampling, either by private parties (including volunteers) who are reporting results to DEM or by parties such as contractors working as DEM proxies, the same sampling procedure issues apply. It is the program manager's responsibility to ensure and verify that these other parties are using appropriate written sampling procedures. This may include review and approval of the other party's procedure.

Sampling procedures, together with any required Health and Safety Plan, must include, when appropriate, information on choice of sampling equipment, decontaminating or discarding the sampling equipment, personal protective clothing or equipment needed, containers and preservation needed for the sample, any requirements related to transportation to the testing location, and field documentation requirements. Sampling procedures, training records and other documents described in this section, are subject to the requirements in Chapter 6 of this QMP, "Documents and Records."

As part of annual program assessments, program managers must review their sampling procedures, and the results of that review (with recommendations for improvements or other changes) must be forwarded to the QA Manager. This review must include checking to be sure that the QA/QC measures in the procedure are sufficient to meet the established DQOs. Where procedures produced by others are used, a review must also be done, but it can be limited to ensuring that the most recent guidance is still being used**.**

### iii. Field-Testing

Samples may be tested or examined in the field, that is, in close proximity to the location where the sample was taken. The decision as to whether field or fixed laboratory testing is appropriate is the responsibility of the program manager. Program managers should be aware of technological advances that allow for higher quality field-testing than has been available in the past.

Where samples are examined or tested in the field, documentation must take place immediately upon testing, following established guidance for documentation. See Section 8.8 of this QMP for information on taking field notes. The field personnel must not rely on memory and record results later. Field-testing equipment must be calibrated per the manufacturer's recommendations, and calibration records must be kept. If calibration is done in the field, staff should keep this information with the field notes and may put a copy of these calibration records in the file.

When deciding what procedure to use for any field-testing effort, the following considerations must be factored in:

a) It must be known what compounds are being tested for, in what medium, and what detection limit is needed to produce meaningful results.
b) An estimate must be made of other compounds or conditions present that could interfere with detecting the compounds being tested for.
c) A decision must be made about the need to split some samples so that confirmatory testing can be done in a laboratory.
d) The environment in which the testing will take place – outdoors or in a truck or trailer must be considered. There may be special weather-related requirements for any piece of equipment such as a need to avoid low temperature or high humidity conditions.
e) The personnel doing the testing must have the proper training to run the testing equipment in question. Training records must be kept, when appropriate.

When others do field-testing, either by private parties (including volunteers) who are reporting results to DEM, or by parties such as contractors working as DEM proxies, the same procedure issues apply. The program manager must ensure that these non-DEM parties are using appropriate written procedures. This may include review and approval of the other party's own procedure. Reference to other standard procedures is encouraged.

Field testing procedures may include information on the choice of equipment, calibration of the equipment and calibration records, other QA/QC needed to ensure that DQOs are met, decontamination requirements, personal protective clothing or equipment needed, containers and preservation needed, and any requirements related to transportation to the testing location. Field-testing procedures, training records, and other documents described in this section, especially as regards recording of results and calibration records, are subject to the requirements in Chapter 6 of this QMP, "Documents and Records."

The testing procedure to be used must be reviewed and agreed upon before leaving for the testing trip. This is necessary to avoid confusion in general, but especially to ensure that proper containers and equipment are taken. It is recognized, however, that there may be unknown site conditions or circumstances, such as those associated with emergency response situations, which would preclude staff from being able to follow this strict guidance in all instances. In such situations, professional judgment and field staff experience would take precedence. After the incident, written documentation of any testing procedures conducted in the field, along with any relevant extenuating circumstances, must be provided.

The program manager must review field-testing procedures generated within DEM annually, and send the results of that review, with recommendations for improvements or other changes, to the QA Manager. This review must include checking to be sure that the QA/QC measures in the procedure are

sufficient to meet the established DQOs. Where procedures produced by others are used, a review must also be done, but it can be limited to ensuring that the most recent guidance is still being used. The QA Manager and Quality Team will evaluate the review and assist the program manager to implement the recommended changes.

### iv. Multiple Samples

The term "Multiple Samples" includes duplicate, replicate or split samples taken to validate sampling and analytical procedures. This section provides a framework for field and laboratory personnel to define "multiple samples" at the beginning of a project. Since there are number of variations on these definitions, the discussion below are suggested guidelines for the use of these words.

Multiple samples at a given sampling point or location are frequently collected and analyzed for various purposes, including duplicate, replicate or spilt samples. For purposes of QA/QC, field duplicate samples are two separate aliquots of the same sample, collected at the same time and sampling location under identical conditions. The two aliquots are sent to the same laboratory and treated exactly the same throughout the laboratory processes, with one of the aliquots being given a coded sample identification so the laboratory does not know it is a duplicate of another sample. Replicate samples are two sample aliquots taken from the same container in the laboratory, then processed and analyzed as two separate samples, and treated exactly the same throughout the laboratory processes.

Duplicate and replicate samples are maintained on the same chain of custody form and are analyzed for the same parameters using the same analytical method. Duplicate and replicate samples will give a good indication of variability and precision. This can be a means of determining false positives or negatives. Other controls for false positives and false negatives are laboratory QC data such as surrogates, matrix spikes, blanks, and laboratory control samples. Duplicate samples are frequently required by the QAPP or may be taken at the discretion of the project leader or management personnel based on the sensitivity and importance of the sampling event and should be described in the QAPP.

Split samples are duplicate samples that the sampler shared with another party, such as another agency, another program or a responsible party. The sample is divided into two aliquots after sample preparation process (i.e. pulverizing, mixing or sample composting) and the second aliquot give to a second party who has the sample analyzed independent of the first aliquot, usually at a different laboratory. The second aliquot can be analyzed for the same parameters or different parameters, depending on the purpose of the split sample. This can be a means of verifying the accuracy of the analysis, verifying that a sample has not been tampered with, or providing for analyzing results for additional or different parameter than the first sample.

### v. Analysis of Samples

Sample analysis involves the characterization of materials based on chemical or physical properties. Analysis results in generating raw data from instrumental analysis, chemical analysis, biological, or physical testing. The analytical methods used shall be specific and sensitive enough to answer the question posed by the project objectives and meet the data quality objectives. This will be assured by conformance to QAPP's and SOP's developed and approved according to the guidelines presented in this document.

Once results are received, the raw data is translated into qualitative identifications, quantitative determinations, and/or statements of condition, in other words, into useable information. This process will include arithmetic calculations and statistical evaluation of results for a sample or collection of samples. Translation of data will be performed in accordance to QAPP's and SOP's developed and approved according to guidelines presented in this document.

**vi. Data Assessment and Comparison of Results Against Established Criteria**

Data must be assessed to determine its usability in meeting the project goals and objectives. This will be done based on the data quality objectives of the project and the data deliverables provided as specified in the QAPP for the investigation or remediation.

For groundwater sampling, the data would be assessed by the project manager based on historical trends from the facility and compared against standards listed in the Rules and Regulations for the Investigation and Remediation of Hazardous Materials Releases and/or the Groundwater Quality Regulations.

For drinking water sampling, the data would be assessed by the project manager and compared against standards listed in the Rhode Island Department of Health's Rules and Regulation Pertaining to Public Drinking Water, as amended.

For soil samples collected, a project manager will usually assess the data and compare it against standards listed in the Rules and Regulations for the Investigation and Remediation of Hazardous Materials Releases.

For surface water sampling, a project manager will usually assess the data and compare it against standards listed in the Water Quality Regulations.

For sediment samples collected, a project manager will usually assess the data and compare it against background sediment sample results collected during the same round of sampling, soil standards listed in the Rules and Regulations for the Investigation and Remediation of Hazardous Materials Releases, or appropriate established sediment standards as set by other federal or state agencies.

For air sampling, samples are compared to national standards for various air pollutants including, but not necessarily; limited to: National Emission Standards for Hazardous Air Pollutants (NESHAPS), National Ambient Air Quality Standards for ozone, and standards for carbon monoxide, nitrogen oxides, sulfur dioxide, lead and particulate matter.

For soil gas samples collected, samples can be collected via active soil gas survey or passive soil gas survey, and are compared to background concentrations or, for solid waste landfills, the Rules and Regulations for Composting Facilities and Solid Waste Management Facilities.

**vii. Environmental Condition Descriptions and Data**

Many DEM programs do not deal with environmental data in the sense of laboratory test results, of parts-per-million of a particular contaminant. For example, the Wetlands program staff gathers information about environmental conditions, i.e., they describe conditions at a given location at a point in time. Personnel determine if the location is a wetland; has it been filled or dredged; how do

conditions now compare to earlier conditions; and who and what is present. Other programs that conduct sampling in the more typical sense will also gather this environmental condition data as an adjunct.

This information is very important to DEM, and can be especially important for enforcement purposes. As with field sampling and testing, the purpose of the site visit or inspection must be understood in advance. Supervisors are responsible for ensuring that the field personnel, when taking measurements, know how to use the measuring tool in question. This can be quite simple in the case of a measuring tape, or equipment-specific training may be needed. If the latter is true, records of the training must be kept. Manufacturer's recommendations regarding use of the equipment must be followed.

For any field visit to inspect a site or to take samples or conduct field-testing, the visit must be recorded in a field book or on a form specific to the program. While the level of documentation will vary depending on the data use, recommendations regarding field documentation include the following:

a) The site name, location, date, time of arrival and departure, weather conditions (temperature can be estimated), and the identity of persons present must be recorded.

b) The purpose of the visit and any activities taking place must be recorded, including any personal protection being used. This note taking must be completed before leaving the site area. Notes added after leaving the site area should be marked as such.

c) Nothing is to be erased in a field book. When mistakes are made, the mistaken information is to be struck through with a single line so that it can still be read. The change is to be dated and initialed. Also, all unused lines in the field book should be struck through and initialed.

d) Other events or conditions should be noted. Personnel should be liberal in applying this principle. Items that do not appear to matter often do. An example would be: While sampling groundwater at a contaminated site, personnel note that children are riding bicycles across the back lot. This might not be noted, since it has nothing to do with the sampling. However, this is important information to site managers and risk assessors – it is evidence that children may be at risk, which may not have been obvious. Contacts with people working at the site, the site owner, neighbors, local officials, representatives of utilities or other government agencies, or other interested parties must always be recorded.

e) DEM encourages the use of photographs and videotapes to record field conditions. Like the field notes, these visual records are public documents unless they become confidential as confidential business information or for enforcement purposes. Film photographs should be printed in duplicate. Prints and copies of videotapes or electronic photographs may be sent to members of the public (especially the site owner) or other agencies, but the photographic negative or the original of the videotape or digital photograph must remain with DEM unless specifically authorized by the program manager to be released.

f) Prints of photographs and the outside of video tape cassettes should be marked identifying the date the picture was taken, the site or case, and the name of the person who took the pictures. For videotapes, the person taking the pictures should start the shot by introducing him/herself and the location being shot.

g) Where there may be enforcement issues, care must be taken when using digital photographs. The person who takes the picture should print out the image and attest that the picture accurately reflects the conditions at the time the image was captured.

h) As noted above, field notes or other field documentation must be considered in the public record. When requested, copies of the field documentation must be provided. The program manager and the DEM Legal Unit will make the decision as to whether a particular record is to be treated as confidential.

i) A professional standard must be kept in note taking. Snide, angry or sarcastic notes should never be recorded. Comments on any person's character must be avoided. A strictly factual style should be followed. If necessary, record "He/She/I became agitated…" Any page of any field book may have to be defended in court. The appearance of personal animus can ruin an otherwise tight enforcement case.

j) Handwritten notes taken in the field are not expected to show the best penmanship. However, they should be legible to persons other than the note-taker. If legibility may be an issue, a typed transcript should be prepared and placed in the relevant site/case file. Typed transcripts should show the date of the field visit, the date of the transcription and the name of the person who did the typing.

k) Personnel who are in the field often should keep their field book with them whenever they are on duty and out of the office. Field personnel who "just happened to be passing by" obtain important information. In this case, such observations should be recorded, and reported to authorities as necessary, but personnel should not attempt to make a full inspection without notifying a DEM office and having the proper training and equipment to address the situation at hand (*e.g.,* a septic system inspector who happens upon someone dumping hazardous waste should probably observe from a distance and report the situation to the office).

l) Field books remain in the possession of staff. Copies of the field book pages are placed in site/case files as needed. Program-specific field forms are placed in the site/case file. Photographic and/or video documentation is also placed in the site/case file.

### viii. Review and Validation Of Data

As a general rule, all data or information must be checked before it is released to the public or used for making decisions. As with any QA/QC effort, this check should not be done by the same person who generated the data, except when it can be demonstrated that an effective review and validation process can be carried out.

Data checks can take place at different levels; these are referred to as "Data Verification," "Data Validation," and "Data Usability Assessment." The definitions for these terms are provided below:

- Data Verification is a process of evaluating the completeness, correctness, and conformance or contractual compliance of a data set against the method standard, SOP, or contract requirements documented in the project QAPP. Data verification should be performed internally by the analytical group or fixed laboratory generating the data. Additionally, data can be checked by an entity external to the analytical group or fixed laboratory. Data verification may result in accepted, qualified, or rejected data.

- Data Validation is an analyte- and sample-specific process that extends the qualification of data beyond method, procedural, or contractual compliance (i.e., data verification) to determine the analytical quality of a specific data set. Data validation criteria are based on the measurement performance criteria documented in the project QAPP. Data validation must be performed by

an organization independent of the group that generates the data. Data validation results in accepted, qualified or rejected data.

- Data Usability Assessment is the process of evaluating validated data to determine if it can be used for the purpose of the project, (i.e., to answer the environmental question or to make the environmental decisions that must be made). Data usability includes the following sequence of evaluations:
  a. Individual data sets are evaluated to identify the measurement performance / usability issues/problems affecting the ultimate achievement of project quality objectives.
  b. An overall evaluation of all data generated for the project is performed.
  c. The project-specific measurement performance criteria and data validation criteria documented in the QAPP are evaluated to determine if they were appropriate for meeting project quality objectives.

DEM expects that in most cases, reviews that can be classified as "Data Usability Assessments" will be sufficient. In some cases however, more formal data verification and validation may be necessary. These more rigorous reviews are more desirable when:

a) A funding agency requires it.
b) There are serious public health and/or environmental impacts.
c) A matter is under litigation, enforcement or a court-ordered schedule, and therefore may be highly scrutinized.
d) A program is being implemented for the first time; or
e) The program has a research aspect.

When the program manager finds that formal data verification and/or validation is necessary, relevant USEPA guidance should be followed.

For the more ordinary forms of data review, at a minimum, supervisors should review the information. This is the most basic level of review, and is intended to cover the simplest issues. This review should cover:

a) Checking consistency and range issues. For instance, a pH of 0.5 in a fresh water sample should be flagged at this point. Also, the result in question should be checked for consistency with past results at this location or, as appropriate, with similar locations.
b) Checking the completeness and appropriateness of the sampling and testing. Were the right locations/samples tested for the right parameters?
c) Checking that correct methods were used.
d) Checking for transcription errors.
e) Checking that the work was done in accordance with the plan, or if changes were necessary, that the changes were adequately documented.

If there is any doubt as to the validity of a certain data point, the first step is to re-sample and/or re-test.

Beyond issues that can be resolved by re-sampling, many factors can cause a data point or set to be invalid. The art and science of error analysis cannot be fully addressed in a document of this size, but if there are issues with a data point or a data set, the program manager should work with the Program Manager and Team and with his/her own staff to resolve the issue. The goals are to determine how, or

indeed if, this particular data is incorrect; to obtain correct data; to record the decision, and ultimately, to ensure that the issue does not recur.

### ix. Reporting Results

When reporting the results of a measurement, test, or environmental condition, the object of the report is to clearly communicate the result to a specific audience. The following should be considered when reporting results:

a) Information should be included so that the person receiving the report will know that the data is of appropriate quality. QA/QC information must not obscure the data being reported.
b) When practical, data should not be obscured by technical jargon, therefore when preparing a report the audience must be considered. For reports to the public, greater clarity is needed, and including detailed QA/QC information may not be necessary. When reporting to technical staff, full QA/QC information should be included.
c) Reports must include the name of the sampler/tester and of the reviewer. Dates and sampling/test methods must be included or referenced. Raw data should be included as necessary.
d) To allow for clear communication, tables and graphs are encouraged. Where past results are part of that summary table or graph, the report should include enough information to allow interested people to find that past data. Including the date of the past sampling/testing, the location and parameter being sampled/tested, and the person/unit that did the testing will probably be sufficient to meet this goal.
e) Sampling and test results must be reported to the designated program person. For instance, the contract laboratory will report to the person doing the sampling, unless specifically instructed otherwise. The program manager is responsible for instructing staff to forward results to the proper parties.
f) Where samples are collected on private property, the property owner must receive the results.

## C. Quality Assurance Project Plan (QAPP)

The overall planning goal is to produce written documentation describing how the data will be acquired, analyzed, evaluated, and assessed against its intended use and the quality performance criteria. The form of this document can be program-specific. In some cases, memos to staff will suffice. However, it may be necessary for the program manager to develop more specific quality assurance documents. One document is the Quality Assurance Project Plan (QAPP), which is typically required in USEPA-funded activities. QAPPs will be prepared in accordance with this QMP and two relevant USEPA documents: a) *USEPA Region 1 - New England Compendium of Quality Assurance Project Plan Requirements and Guidance, October 1999, Final,* or later edition; and b) *USEPA Requirements for Quality Assurance Project Plans, QA/R-5, March 2001,* or later edition). The QA Team and the Quality Manager are resources to program managers tasked with developing QAPPs and related documents. A QAPP should be considered when:

a) A funding agency requires it.
b) There are serious public health and/or environmental impacts.
c) A matter is under litigation, enforcement or a court-ordered schedule, and therefore may be highly scrutinized.
d) A program is being implemented for the first time; or

e) The program has a research aspect.

DEM programs may be required to develop QAPPs by EPA or other funding agencies. All draft QAPPs must be submitted to the DEM QA Manager at the time of submittal to EPA. The programs will forward a final copy of the QAPP to the QA Manager, in electronic format, when EPA approval is granted.
The Quality Team member, in cooperation with the relevant program managers, is responsible for tracking the development of any required QAPPs. The DEM QA Manager will coordinate and submit to EPA yearly updates of the DEM QAPP Inventory. This document includes a listing of all pending and completed QAPPs that DEM developing. The status of the various QAPPs developed, or requiring development, is listed in Appendix B of the QMP.

This planning task can be done at two different scales, which are described in terms of QAPPs; the Generic, or Program QAPP, and the Project-Specific QAPP. The Project-Specific QAPP is a single planning document that covers all the QA issues for a single, finite project. This has been the most commonly followed model.

However, a Generic or Program QAPP can be useful. The Generic QAPP is useful when a program knows it will be doing certain work tasks repeatedly. Groundwater sampling at Superfund sites is an example – the actual sampling and testing is similar at all sites, so the planning document is prepared once. This Generic QAPP can cover description of the program and its organization; general personnel information indicating the types of positions/titles that will be assigned various tasks; data quality objectives; documentation and record needs; data assessment and corrective action procedures; and monitoring and sampling procedures. The Generic QAPP is reviewed for appropriateness annually and has a five-year life span. Using Generic QAPPs can save a program much document preparation time when the program knows that similar work will be repeated.

Approval of QAPPs and SAPs will need to follow the protocol outlined in the SOP (Appendix I) concerning QAPP development. The program manager will send qAPPs required by USEPA to USEPA for approval. Copies of the QAPPs shall be sent both in hard copy and electronically to the QA Manager. Approval of the planning document is required before the work described in the plan can be initiated.

# 9. Implementation of Work Processes

## A. Ensuring Work Is Performed Using QMP Principles

The mission of the Rhode Island Department of Environmental Management (DEM) is to “Enhance the quality of life for current and future generations by protecting, restoring and managing the natural resources of the state; enhancing outdoor recreational opportunities; protecting public health; and preventing environmental degradation….”. In carrying out its mission, DEM relies upon many different types of data that enable it to better evaluate and measure existing environmental conditions, to identify and understand areas of concern, to assign responsibility for these areas, and to promote and enhance credible communication on environmental issues to a wide variety of audiences.

The data DEM uses must be credible, and the quality of that data must be appropriate for its intended uses. The Department, through its Quality Management Plan is moving towards a more systematic

approach to the management of data and overall quality assurance issues across DEM. There are two primary means of ensuring that work will be performed according to quality management practices, i.e. program assessments and standard operating procedures.

### B. Program Assessment

DEM will be undertaking a phased approach to assess our progress in meeting QMP objectives. The Department has developed a self-assessment tool that will be used by the programs identified in Appendix F. Assessments will be conducted initially, at the program level, to determine conformance with department procedures, quality assurance project plans, standard operating procedures (SOPs) and other applicable requirements. Other objectives of assessments are to determine the accuracy of data collection and management systems, identify opportunities for program improvements, and to verify the effectiveness of Department programs.

The programs will be assessed using two tools. Form A is for DEM programs whose operations using environmental data are described in one or more EPA-approved Quality Assurance Project Plans (QAPPs), or who have complete Quality Assurance Manuals.

Form B is intended for programs that are in the earlier stages of building a QA system. The majority of programs will use this form. Form B consists of several sets of questions, each of which are specific to particular topics within the DEM QA System. Each of them refers to a chapter or section of the DEM Quality Management Plan. Form B is also useful to help programs with established quality systems to conduct a more complete self-assessment. As noted above, use of a form can ensure that all program areas are adequately covered. It is DEM's goal that all program assessments will be finalized by the end of March 2006.

DEM will need to establish a process for Management Systems Review. This process will ensure that technical documents are reviewed and developed that will meet pertinent QMP standards. After the program self-assessments are analyzed, DEM will develop a Management System Review assessment. This work will begin in the late summer of 2006.

In subsequent years, the Quality Manager and the Assistant Directors in the Bureau of Environmental Protection will identify and prioritize assessment issues, develop annual assessment plans, and ensure that assessments conform to this procedure.

To accomplish this assessment process, every DEM staff member must understand how his or her activities affect data quality issues, and all staff must know what they have to do to help produce quality data. The Quality Manager will develop a simple training package that can be reviewed by appropriate employees. This training information will be developed in late 2005. The Quality Manager will also set up a series of meetings in late 2005 to discuss this process with the Quality Team and will work on an assessment training protocol.

## C. Standard Operating Procedures

DEM has developed a Standard Operating Procedure (SOP) for developing and approving standard operating procedures (Attachment I). SOPs help to assure consistency in common procedures and are

encouraged for routine, standardized or special/critical operations. By establishing standardized methods for performing common repetitive tasks, the programs will improve their efficiency, consistency, verifiability, credibility, and ability to attain the highest levels of Quality Assurance, Quality Control, and Quality Improvement (QA/QC/QI). This document describes the DEM's procedure for developing, formatting, approving, and distributing standard operating procedures (SOPs). SOPs that are newly developed should use this format. QAPPs that use other previously developed SOP, e.g., those from environmental monitoring manufacturers, should identify the source of the SOP. All SOPs used by the programs that are in electronic format, should be forwarded to the Quality Manager.

# 10. Assessment and Response

## A. Commitment to Assessment and Response

Meeting the Department's Commitment to Quality requires a commitment to continuously improve the quality system in the Department and respond quickly and effectively to any problems or shortcomings uncovered in the assessment processes. As explained earlier, DEM has developed and now needs to maintain a planning process to ensure our systems remain effective and meet current policies and requirements. This planning process will include the reviews and checks outlined in Chapter 3 previously and will strive to continuously improve our quality system.

The first step in developing and implementing a quality system throughout the regulatory programs within DEM was the establishment of this QMP. This chapter of the QMP describes the processes to be implemented to ensure that the Quality System is sustainable once it has been established.

## B. Assessment Processes

### i. Program Self-Assessments

DEM is just beginning to implement assessments of the environmental programs. As mentioned above, the assessment process in DEM will be de-centralized throughout the programs that are responsible for collecting and using environmental data. A decision has been made to initiate the assessment process using a self-assessment tool. This process will take a while to fully implement. When adequate staff is trained in Quality Management processes, DEM will consider the next step in the evolution of an assessment program, that is second party assessments. Prior to the time when second party assessments will be conducted, the Quality Team along with the Quality manager will develop tools and guidance for planning, scheduling and implementing these assessments.

The programs that have been identified in Appendix G are responsible for conducting the self-assessment. The Quality Team member in the Office will be responsible to coordinate the self-assessments with the particular program / project manager. The program manager will either conduct the assessment or will work with other key program members to fill out the form. After a self-assessment has been completed, the results will be forwarded to the Quality Manager who will review the assessments. The Quality Manager is evaluating a Standard Operating Procedure that will detail the process used to evaluate the assessment.

### ii. Management System Review

After all programs have undergone at least one self-assessment, the Quality Manager will begin to develop a Management Systems Assessment for the Department. This Management Assessment will be performed to test the DEM quality system.

The QA Manager will coordinate a management systems review in conjunction with the review and update of program work plans and negotiation of the Performance Partnership Agreement. The Management System Review will gauge whether the quality system is being successfully implemented and to identify opportunities for improvement. This review identifies patterns or issues that can affect project commitments or performance quality. The QA Manager and the Quality Team will select individuals to conduct the reviews. This will provide a level of independent oversight by conducting management systems reviews. These reviews provide an independent qualitative assessment to determine whether the program quality system, policies, procedures, and practices adequately address generating the type and quality of data required.

In future years, the Quality Manager will develop a draft assessment plan that will be based on the results of the self-assessments and the Management Systems Review. The Assistant Directors of the Environmental Bureau will review this draft assessment plan and when approved, will be included in the work plan for the following year.

### iii. Project Assessments

From time to time, the section supervisors will perform project assessments. Assessments will be based on the following:

- Assessments of QAPPs - The program manager or designee will assess completed projects based on a schedule developed by the Quality Manager and the Quality Team. The project assessment will also evaluate the adequacy of facilities, equipment, supplies, personnel, and existing procedures to meet project objectives. Findings of the assessment, including any deficiencies, inadequacies, or systematic problems will be discussed with the project management and the Quality Team at the quarterly meeting. The recommendations of the Quality Team will be reviewed and acted on by the Department senior management.

- Quality Control Indicators - During the project, personnel may use quality control indicators to identify problems with sampling and/or analytical procedures and to highlight anomalous results. Quality control indicators can include blanks, standard reference materials, QC check samples, replicates, spikes, and alternative methods. Problems that are identified are documented in the project file and should be discussed with the QA Officer designated on the QA Plan cover sheet and the program supervisor. They may decide how to respond to the problems together, or after consultation with the Chief and/or appropriate Assistant Director.

- When a project is concluded, the work product is evaluated for completeness, accuracy, and appropriateness to meet the project objectives. The procedures used and the documents generated are evaluated for adherence to policies and standard operating procedures.

# 11. Quality Improvement

The final part of the quality management cycle is assuring that the actions taken to assess and correct deficiencies in the system are continuously fed back in to the planning process to change and improve the system and its outputs. Continuous process improvement is a core practice at DEM and the regular annual assessment process outlined below represents the minimum necessary to allow such continuous improvement to occur.

### i. Roles And Responsibilities For Continuous Quality Improvement

The responsibility for Quality Improvement in the DEM environmental offices is as follows:

- Program staff reports problems/issues to their supervisors, who report to the program managers. All relevant issues must be addressed. Problems with more immediate solutions should be resolved in an appropriate and timely fashion. All problems and corrective actions must be documented, and the process reviewed at the time of the annual internal review;

- Program managers review and assess their programs annually, and report, in writing, to the Quality Team member and the QA Manager. The causes of the noted problems and deficiencies must be identified and corrective actions either recommended or, if they have occurred already, documented;

- The QA Manager summarizes the reports from the program managers, as well as the results of the program assessments, and reports, to the DEM Senior Management, the department-wide findings through the written Quality Assurance Status Report. This report must include recommendations to address outstanding deficiencies. Issues should be prioritized for Senior Management consideration;

- The DEM Senior Management reviews the annual Quality Assurance Status Report and authorizes changes that need to be tracked in the work plan; and

- The Quality Team Member in each program tracks the progress in implementing the changes authorized by the DEM Senior Management, as well as providing assistance where necessary. Changes made are documented and forwarded to the QA Manager for inclusion in the next year's Quality Assurance Status Report.

### ii. Assessment Review

The Quality Manager will be the focal point for collecting information about the Management System Reviews, Program Self-assessments, Project and QAPP Assessments and Quality Control Indicators. The following procedures will be used to review assessments:

- Program Self-assessment
  The Quality Manager, upon completion of the analysis of the Program Self-assessment, will meet with the Quality Team member responsible for the self-assessment and any other team member who worked on the self-assessment. The purpose of the meeting is to review the self-assessment and any follow-up that may be needed. The analysis may also identify training needs of the program and if needed, a training plan will be developed.

- Project / QAPP Quality Control Indicators
  Each office will document findings of any Project / QAPP Quality Control Indicators assessments conducted, including any deficiencies, inadequacies, or systematic problems and report this information to the QA Manager.

- Management System Reviews
  Management System Reviews will also be documented in an annual report and discussed as part of the development of the Work Plans and negotiation of the Performance Partnership Agreement. Implementation of the quality system may also be included in the Professional Development Review process for management.

**iii. Assessment Reporting**

As noted previously, the QA Manager will evaluate the results of the annual reviews/self-assessments and other assessments of each program's quality system, the causes for deficiencies and corrective actions taken. Once all the program self-assessments including any findings of a Project / QAPP Quality Control Indicators assessments are collected, the Quality Manager, with assistance of the Quality Team, will produce a Quality Assurance Status Report. This report will be sent to senior staff. This Quality Assurance Status Report is the primary formal vehicle for communicating issues to DEM Senior Management. Deficiencies or gaps noted by the self-assessments will require a program to develop a corrective active plan. The implementation of elements of the corrective action plan and success of the quality management system will be tracked through quarterly reports of the DEM Work Plan.

It is expected that USEPA, as part of their responsibility to conduct periodic evaluations of the programs it funds, will review the quality systems for many DEM programs. The results of USEPA's reviews will be communicated to the QA Manager, and ultimately, to the affected programs. The QA Manager will communicate the results to the affected program managers, who will implement appropriate recommended changes with the QA Manager's assistance. These changes must be reported in the Quality Team Member's Quality Assurance Status Report.

**iv. Quality Improvement Summary**

The overall goal at all steps of this continuous improvement process is to anticipate and prevent problems from arising wherever possible, and otherwise identify and correct them as quickly as possible.

The QMP will be reviewed annually to ensure that all information contained within it is relevant and up-to-date. Any necessary QMP revisions will be made, and the revised document will be submitted to USEPA. Five years from the date of approval of this QMP, the QA Manager and Quality Team will undertake a complete review of the document and submit a revised QMP to USEPA for approval.

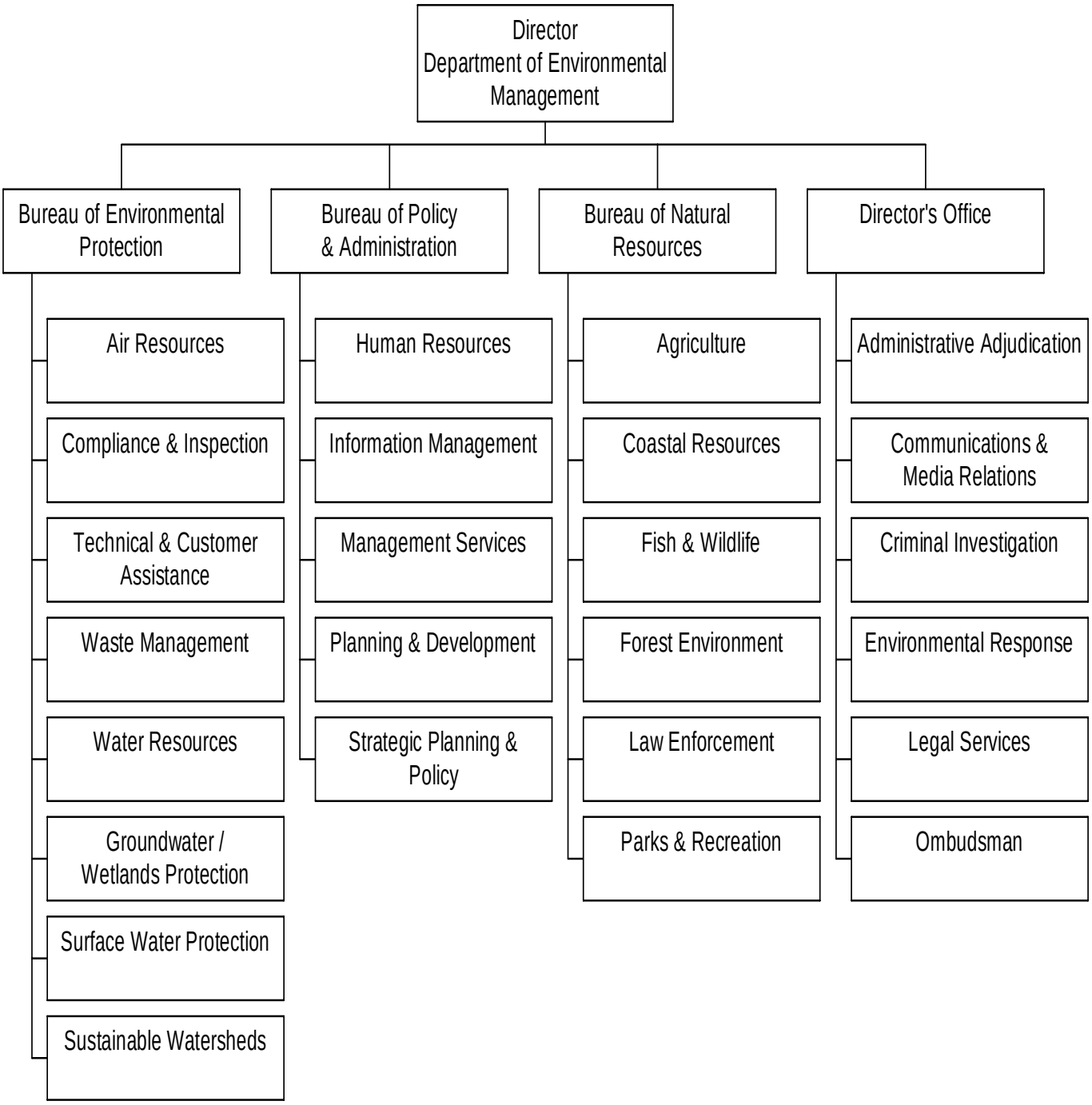
Each environmental program at DEM will be notified that the approved QMP is posted on the DEM Internet for ease of access by program managers and others. Program-specific quality documents will also be posted on the DEM intranet for staff use.

# Appendix A Organizational Charts

## Appendix A-1 Department of Environmental Management

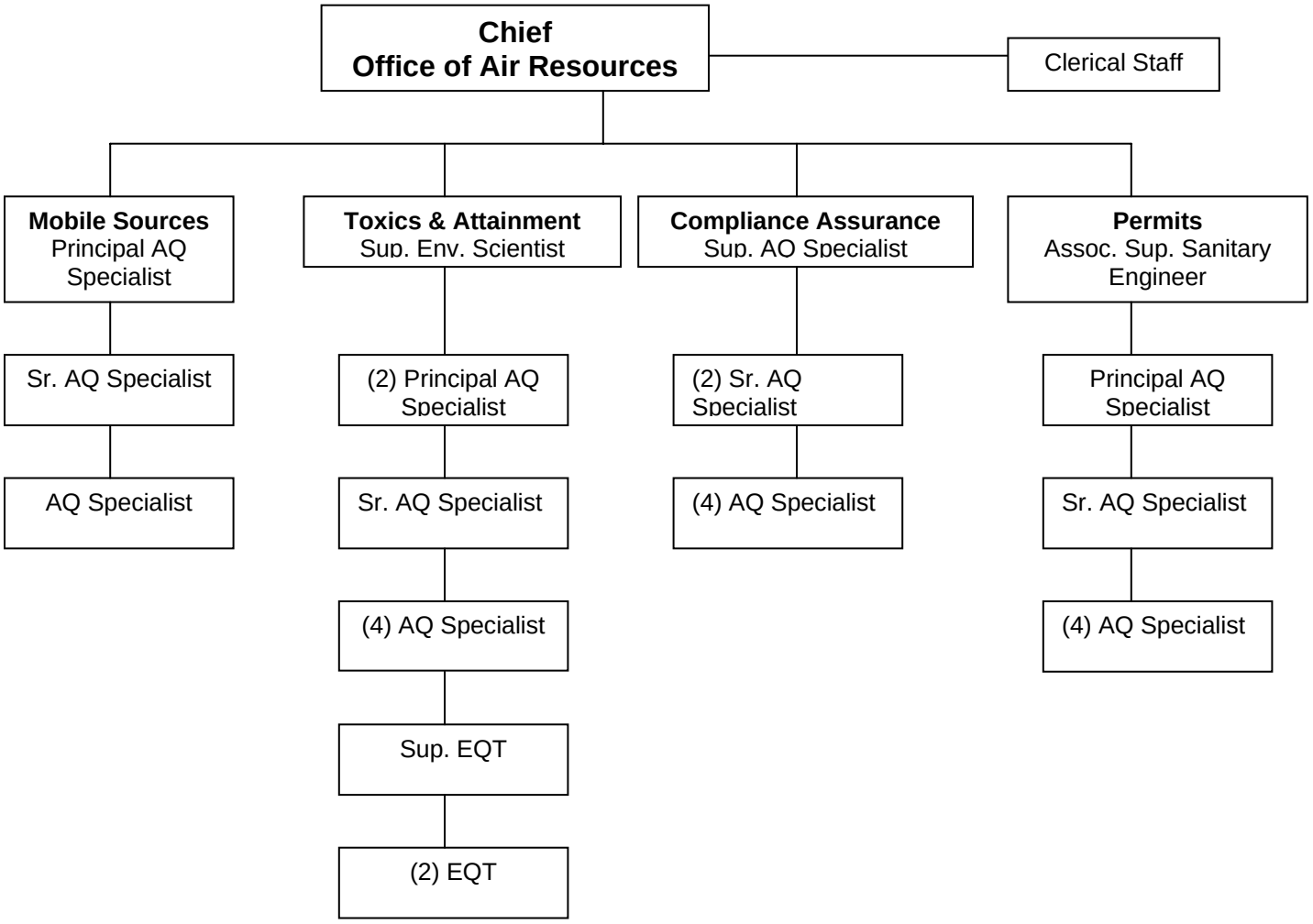
### Department of Environmental Management Organizational Chart

Existing DEM Organization Chart



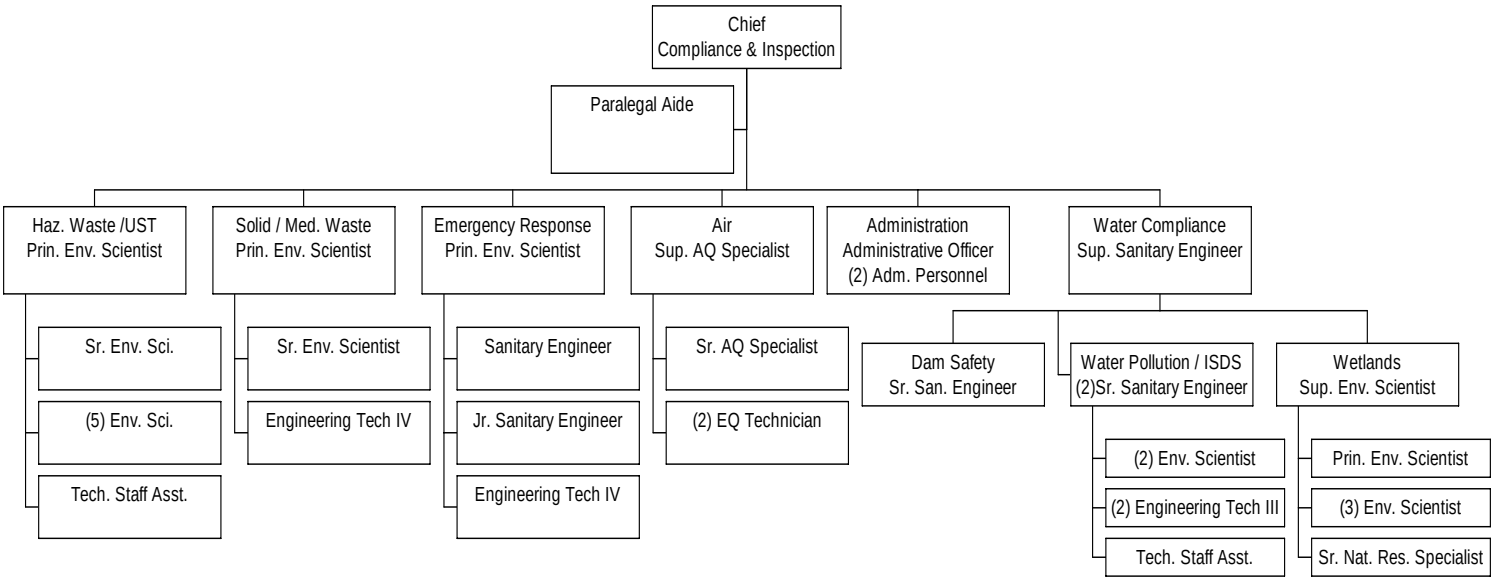
## Appendix A-2 – Office of Air Resources

# Office of Air Resources Organizational Chart



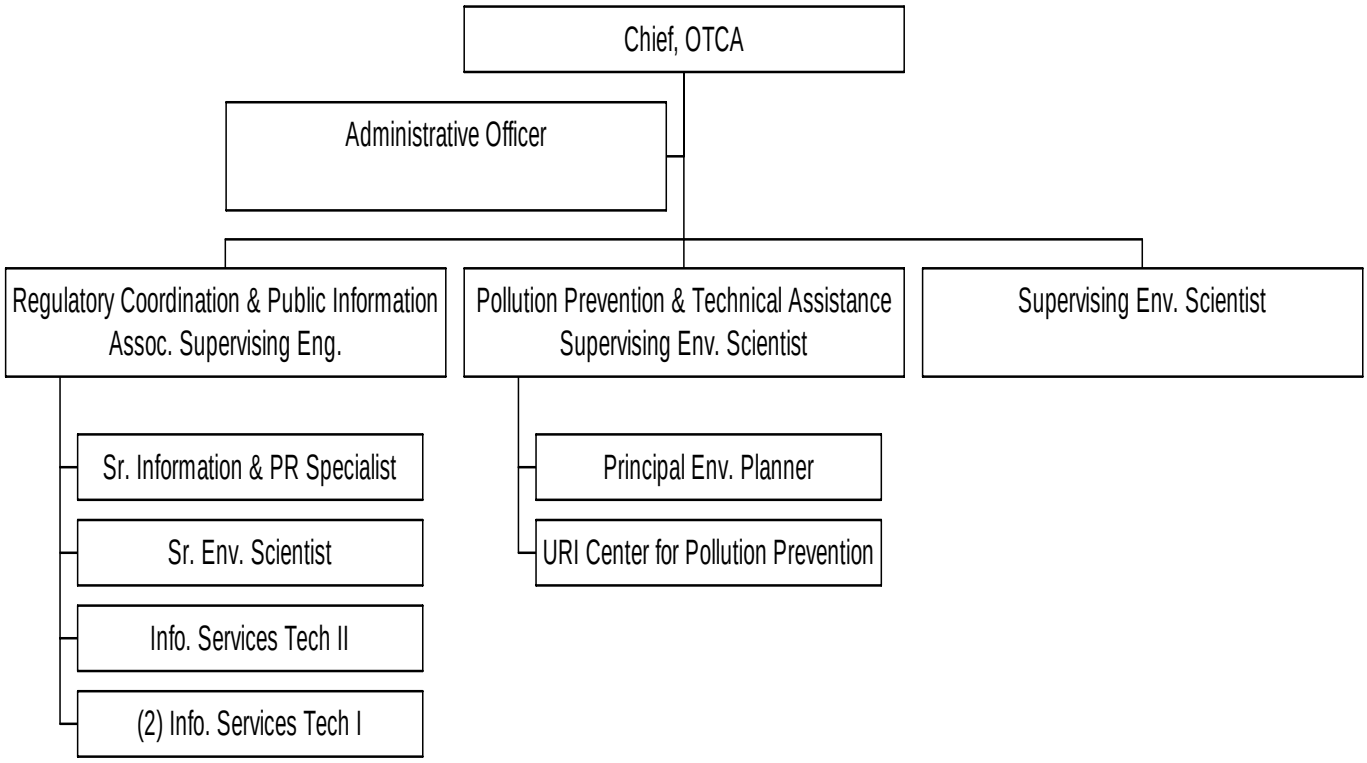
# Appendix A-3 - Office of Compliance and Inspection

## Office of Compliance and Inspection Organizational Chart



## Appendix A-4 - Office of Technical and Customer Services

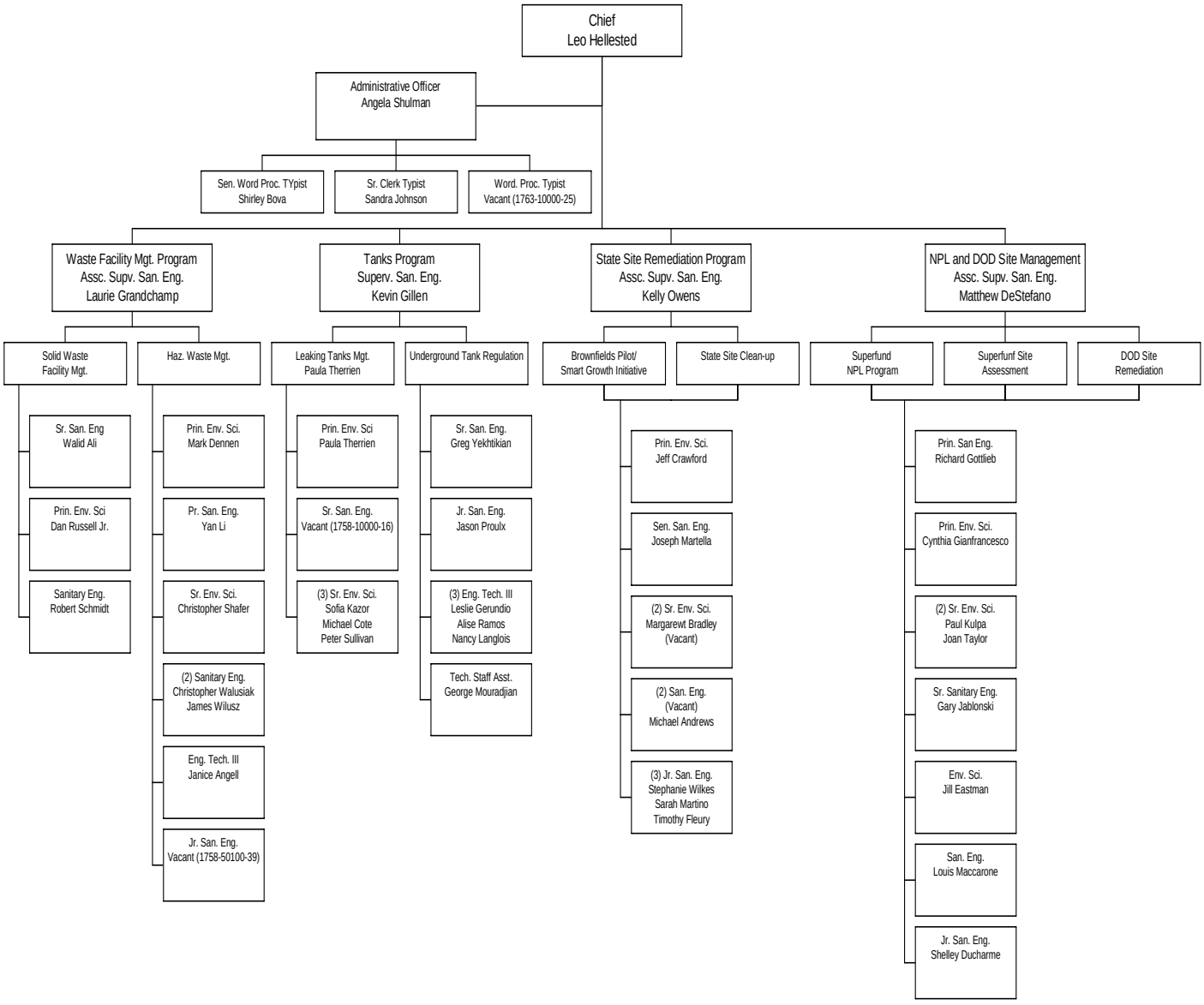
# Office of Technical and Customer Services Organizational Chart



# Appendix A-5 - Office of Waste Management

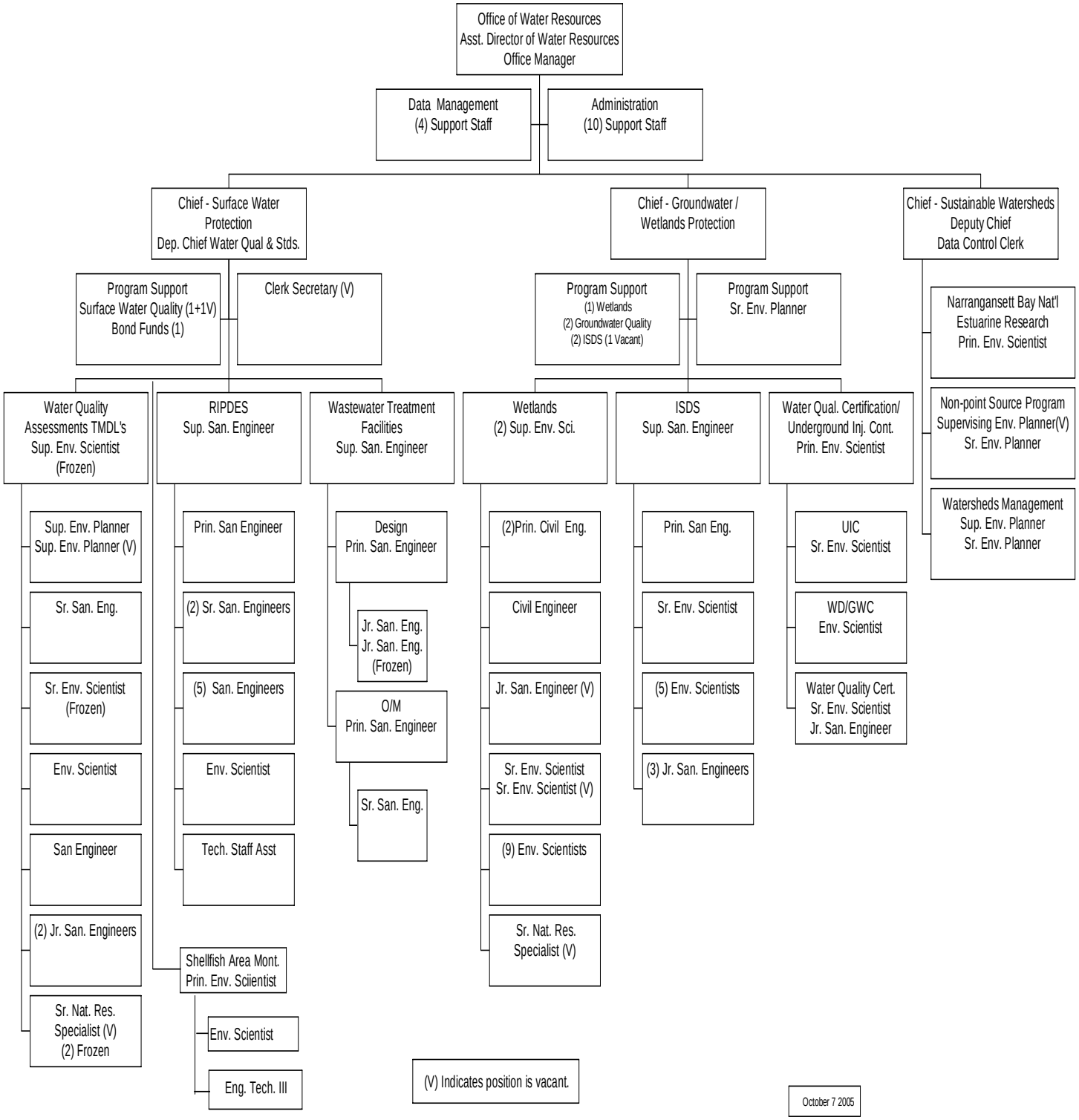
## Office of Waste Management Organizational Chart

Office of Waste Management



# Appendix A- 6 -Office of Water Resources

## Office of Water Resources Organizational Chart



# Appendix B - Inventory of Quality Assurance Project Plans

| Inventory of Quality Assurance Project Plans<br>September 16, 2005 | | | | | | |
|---|---|---|---|---|---|---|
| **Project/Program Name** | **Division** | **Author** | **Contact Person** | **Last Submitted** | **Date Approved** | **Current Status** |
| **Division of Agriculture** | | | | | | |
| Pesticide Sampling | Agriculture | Elizabeth Lopes-Duguay | Elizabeth Lopes-Duguay | 1994 | 1994 | Approved and in place |
| Pesticide formulation and residue & dilution sample analysis | Agriculture | Elizabeth Lopes-Duguay | Elizabeth Lopes-Duguay | | | QAPP with Mississippi State Chemical Lab-Outdated and needs to be updated. |
| **Office of Air Resources QAPPs** | | | | | | |
| **Project/Program Name** | **Office** | **Author** | **Contact Person** | **Last Submitted** | **Date Approved** | **Current Status** |
| Criteria Pollutants | Air Resources | (DOH Lab) | Barbara Morin | | Nov. 2002 | Revision being prepared |
| Fine Particulate Matter (PM 2.5) | Air Resources | (DOH Lab) | Barbara Morin | | August 1999 | Approved and in place. Revision being prepared. |
| Photochemical Assessment Monitoring | Air Resources | (DOH Lab) | Barbara Morin | | July 2000 | Approved and in place. Revision being prepared |
| Air Toxics | Air Resources | (DOH Lab) | Barbara Morin | | March 2001 | Revision submitted 1/05 |
| TF Green Airport Monitoring Study | Air Resources | (DOH Lab) | Barbara Morin | March 2005 | | |

| Inventory of Quality Assurance Project Plans<br>September 16, 2005 | | | | | | |
|---|---|---|---|---|---|---|
| **Project/Program Name** | **Division** | **Author** | **Contact Person** | **Last Submitted** | **Date Approved** | **Current Status** |
| **Office of Waste Management QAPPs** | | | | | | |
| RCRA C Program Generic | OCI/ Waste Management | | Laurie Grandchamp (OWM)/ M. Mulhare (OCI) | | | To be Developed |
| Superfund Pre-Remedial Program Generic | Waste Management | | Cynthia Gianfrancesco | | Dec. 1997 | Approved and in place (needs to be revised) |
| Leaking Underground Storage Tank Program Generic | Waste Management | Sofia Kaczor | Sofia Kaczor | November 2004 (Revision) | December 2004 | Approved and in place. |
| Lincoln Lace and Braid | Waste Management | Fuss & O'Neill | Kelly Owens | | | Approved & completed |
| Stillwater Mill-Clock Tower | Waste Management | Lincoln Environmental | Kelly Owens | | | Approved & completed |
| Olneyville Family Resource | Waste Management | Kelly Owens | Kelly Owens | | | Approved & completed |
| Chepatchet River Park | Waste Management | Fuss & O'Neill | Kelly Owens | | | Approved |
| Parkview Recreation Area | Waste Management | MacTec | Kelly Owens | | | Approved |
| Lister Mill | Waste Management | Fuss & O'Neill | Kelly Owens | | | Approved |
| Festival Pier | Waste Management | Lincoln Environmental | Cynthia Gianfrancesco | | | Approved |
| Brownfields Program (Uses Superfund Pre-Remedial Program) | Waste Management | | Kelly Owens | | Dec. 1997 | Approved and in place (needs to be revised) |
| Rose Hill Regional Landfill Superfund Site | Waste Management | The Louis Berger Group, Inc | Matthew Destefano | January 2003 | 5/29/03 | Approved and in place |
| West Kingston/URI Superfund Site | Waste Management | Woodard & Curran Inc | Matthew Destefano | August 2, 2002 | 12/31/02 | Approved and in place |

| Inventory of Quality Assurance Project Plans<br>September 16, 2005 | | | | | | |
|---|---|---|---|---|---|---|
| **Project/Program Name** | **Division / Office** | **Author** | **Contact Person** | **Last Submitted** | **Date Approved** | **Current Status** |
| **Office of Water Resources QAPPs** | | | | | | |
| **Project/Program Name** | **Office** | **Author** | **Contact Person** | **Last Submitted** | **Date Approved** | **Current Status** |
| TMDL-Providence/ Seekonk River, 1995 – 1996 | Water Resources | Chris Turner | Liz Scott | 1995 | 6/25/95 | Approved and in place. Project Complete. |
| TMDL-Runnins River Dry Weather Coliphage, 1999 | Water Resources | Al Basile (EPA) | Liz Scott | 1999 | 1999 | Approved and in place. Project Complete. |
| TMDL-Kickemuit Reservoir Nutrients and Pathogens, 2000 | Water Resources | Javier Velez (EPA) | Liz Scott | 2000 | 2000 | Approved and in place. Project Complete. |
| TMDL-Barrington/ Palmer/ Warren Pathogens, 1996 including Belcher Stream – East, Wet Weather | Water Resources | Chris Turner | Liz Scott | 4/2/01 | 9/10/01 | QAPP Approved. Project Complete. |
| TMDL-Barrington/Palmer/ Runnins Wet Weather Pathogens, 1998 | Water Resources | Chris Turner | Liz Scott | 4/2/01 | | QAPPs Developed Using 1992 EPA Guidance- Project Complete. |
| TMDL-Barrington and Runnins River Dry Weather Pathogens, 1998 – 1999. | Water Resources | Chris Turner | Liz Scott | 4/2/01 | | QAPPs Developed Using 1992 EPA Guidance. Sampling was incorporated into Barrington/Palmer/ Runnins wet weather QAPP. Project Complete. |
| Narrow River Pathogens, 1999 – 2000 | Water Resources | Kevin Bartlett | Liz Scott | 4/10/01 | | QAPP developed using Runnins River (1999) QAPP as a Model. Project Complete. |
| Hunt River Pathogens, 1999 | Water Resources | Brian Zalewsky | Liz Scott | 4/10/01 | | Draft QAPP completed; using Runnins River (1999) QAPP as a Model Project Complete. |

## Inventory of Quality Assurance Project Plans
**September 16, 2005**

| Project/Program Name | Division / Office | Author | Contact Person | Last Submitted | Date Approved | Current Status |
|---|---|---|---|---|---|---|
| **Project/Program Name** | **Office** | **Author** | **Contact Person** | **Last Submitted** | **Date Approved** | **Current Status** |
| Saugatucket River Pathogens, 2000 | Water Resources | | Liz Scott | 4/10/01 | | QAPP completed using Runnins River (1999) QAPP as a Model. Project Complete. |
| 303(d) Supplemental Monitoring, 1998-1999 | Water Resources | | Liz Scott | 4/6/01 | | QAPP developed using Runnins River (1999) QAPP as a Model. Project Complete. |
| Ninigret / Green Hill Ponds 1999-2000 | Water Resources | Brian Zalewsky | Liz Scott | 2000 | 6/5/01 | Approved. Project Complete. |
| Crooked Brook | OWR | Jason McNamee | Liz Scott | | 6/18/01 | Approved Project Complete. |
| Optical Brightner Ninigret Pond | Water Resources | Brian Zalewsky | Liz Scott | | 6/25/01 | Approved Project Complete. |
| Greenwich Bay Wet Weather Pathogens, 2000 – 2001 | Water Resources | Heidi Travers | Liz Scott | 3/30/01 | 5/15/01 | Approved. Annual updates for 2001 and 2002. Project Complete. |
| Indian Run Metals, 2001 | Water Resources | | Liz Scott | | 6/26/01 | Approved Project Complete. |
| Sands Pond Nutrients, 2001 | Water Resources | | Liz Scott | | 7/10/01 | Approved Project Complete. |
| Woonasquatucket River metals and fecal coliform, 2001 | Water Resources | Kevin Bartlett | Liz Scott | | 9/26/00 | Approved Project Complete. |
| 2000 303(d) Supplemental Monitoring | Water Resources | | Liz Scott | | 2/20/02 | Approved Project Complete. |
| Greenwich Bay Nutrients, 2000 – 2001 | Water Resources | Applied Science Associates | Liz Scott | | 6/4/01 | Approved Project Complete. |
| Bissel Cove | Water Resources | Jason McNamee | Liz Scott | | | QAPP Approved. Project Complete. |
| Point Judith Pond | Water Resources | | Liz Scott | | | Draft QAPP developed. Project on hold. |
| Mashapaug Pond Nutrients, 2001 – 2002 | Water Resources | Tetra Tech/ESS | Liz Scott | | 7/9/01 | Approved. Project Complete. |
| Blackstone River Various, 2001 – 2003 | Water Resources | Louis Berger, Inc. | Liz Scott | | | To be developed by selected contractor |
| Ambient Water Quality Monitoring-URI | Water Resources | | Connie Carey | | 8/30/04 | QAPP Approved |
| Ambient Water Quality Monitoring-USGS | Water Resources | | Connie Carey | | | QAPP in place |
| Watershed Watch | Water Resources | | Connie Carey | | | QAPP in place |
| Taxonomic Identification of Benthic Macroinvertebrates | Water Resources | | Connie Carey | | 10/08/02 | QAPP Approved |
| Stafford Pond Follow-up Monitoring | Water Resources | | Ken Ayers, Elizabeth Scott | | 10/30/01 | QAPP Approved |

# Appendix C - Inventory of Standard Operating Procedures

| RIDEM Inventory of Standard Operating Procedures<br>Appendix C September 16, 2005 | | | | | | |
|---|---|---|---|---|---|---|
| **No.** | **SOP Name** | **SOP Status** | **Date Finalized** | **Format** | **# of Pages** | **Document Originator** |
| | **Quality Manager** | | | | | |
| DO-QM –1 | Procedure for Developing and Approving SOPs | Final | 8/6/03 | Electronic | 9 | T. Getz |
| DO-QM -2 | DEM Standard Operating Procedure for Developing QAPPs and SAPs | Final | 8/6/03 | Electronic | 4 | T. Getz |
| DO-QM -3 | Quality Auditing SOP | Draft | | Electronic | 5 | T. Getz |
| DO-QM -4 | Technical System Audits SOP | Draft | | Electronic | 11 | T. Getz |
| | **Office of Waste Management** | | | | | |
| | **Superfund Program** | | | | | |
| WM-SF-1 | SOP for Civil Surveying at the Rose Hill Landfill, | Draft | Jan 31, 2003 | Electronic | 10 pages | Louis Berger Group, Inc |
| WM-SF -2 | SOP for Surface Water, Leachate and Sediment Sampling at the Rose Hill Landfill, | | January 2003 | | | Louis Berger Group, Inc |
| WM-SF -3 | SOP for Underground Utility Location at the Rose Hill Landfill, Rev. 4, | Final | Jan 1997 | Electronic | 2 pages | Louis Berger Group, Inc |
| WM-SF -4 | SOP for Soil Gas Survey and Evaluation at the Rose Hill Landfill, Rev. 1 | Final | Jan 1997 | Electronic | 21 pages | Louis Berger Group, Inc |
| WM-SF -5 | SOP for Visual-Manual Identification of Soil at the Rose Hill Landfill, Rev. 5, January 1997 | Final | Jan 1997 | Electronic | 18 pages | Louis Berger Group, Inc |
| WM-SF -6 | SOP for Test pitting and Soil Sampling at the Rose Hill Landfill, Rev. 3, January 1997 | Final | Jan 1997 | Electronic | 28 pages | Louis Berger Group, Inc |
| WM-SF -7 | SOP for Well Gauging Purging and Sampling at the Rose Hill Landfill, Rev. 5 | Final | Feb 1997 | Electronic | 29 pages | Louis Berger Group, Inc |
| WM-SF -8 | SOP for Disposal of Bailed Product at the Rose Hill Landfill, Rev. 4 | Final | Jan. 1997 | Electronic | 2 pages | Louis Berger Group, Inc |
| WM-SF -9 | SOP for Well Rehabilitation at the Rose Hill Landfill, Rev. 1, January 1997 | Final | Jan 1997 | Electronic | 15 pages | Louis Berger Group, Inc |
| WM-SF -10 | SOP for Low Flow Purging and Sampling Procedures for the Collection of Water Samples from Monitoring Wells | | 1996 | | Unknown | EPA |
| WM-SF -11 | SOP – Drilling at Rose Hill Landfill | Final | Jan 1997 | Electronic | 22 pages | Louis Berger Group, Inc |
| WM-SF -12 | SOP - Soil Gas Survey and Evaluation at Rose Hill Landfill | Final | Jan 1997 | Electronic | 13 pages | Louis Berger Group, Inc |
| WM-SF -13 | SOP - Sampling of Surface Water and Water-Formed Deposits - Rose Hill Landfill | Final | Jan 1997 | Electronic | 22 pages | Louis Berger Group, Inc |
| WM-SF -14 | SOP - Surface Water Sampling West Kingston Town Dump/ URI | Final | August 2002 | Electronic | 2 Pages | Woodard & Curran |
| WM-SF -15 | SOP for Soil and Sediment Sampling –W. Kingston Town Dump / URI | Final | August 2002 | Electronic | 2 Pages | Woodard & Curran, Inc. |
| WM-SF -16 | SOP for Equipment Decontamination –W. Kingston Dump/ URI | Final | August 2002 | Electronic | 2 Pages | Woodard & Curran, Inc. |
| WM-SF -17 | SOP for Soil and Sediment Sampling –W. Kingston Dump / URI | Final | August 2002 | Electronic | 2 Pages | Woodard & Curran, Inc. |
| WM-SF -18 | SOP-Air Monitoring at the W. Kingston Dump / URI | Final | August 2002 | Electronic | 2 Pages | Woodard & Curran, Inc. |
| WM-SF -19 | SOP - Vapor Diffusion Sampling In Sediments (Volatile Organic Compounds) W. Kingston Dump/ URI | Final | August 2002 | Electronic | 3 Pages | Woodard & Curran, Inc. |

| RIDEM Inventory of Standard Operating Procedures<br>Appendix C — September 16, 2005 | | | | | | |
|---|---|---|---|---|---|---|
| **No.** | **SOP Name** | **SOP Status** | **Date Finalized** | **Format** | **# of Pages** | **Document Originator** |
| WM-SF –20 | SOP - Pore Water Sampling –W. Kingston Town Dump / URI | Final | August 2002 | Electronic | 4 Pages | Woodard & Curran, Inc. |
| WM-SF -21 | SOP -Terrain Conductivity (Em-31) Method Sampling – W. Kingston Town Dump / URI | Final | August 2002 | Electronic | 2 Pages | Woodard & Curran, Inc. |
| WM-SF -22 | SOP - Test Pit Sampling – W. Kingston Town Dump / URI | Final | August 2002 | Electronic | 3 Pages | Woodard & Curran, Inc. |
| WM-SF -23 | SOP - Groundwater Sampling - W. Kingston Town Dump / URI | Final | August 2002 | Electronic | 2 Pages | Woodard & Curran, Inc. |
| WM-SF -24 | SOP - Small Diameter Well Point Installation and Sampling – W. Kingston Town Dump / URI | Final | August 2002 | Electronic | 3 Pages | Woodard & Curran, Inc. |
| WM-SF -25 | SOP - Seismic Refraction Method Sampling – W. Kingston Town Dump / URI | Final | August 2002 | Electronic | 3 Pages | Woodard & Curran, Inc. |
| WM-SF -26 | SOP - Monitoring Well Installation – W. Kingston Town Dump/ URI | Final | August 2002 | Electronic | 3 Pages | Woodard & Curran, Inc. |
| WM-SF -27 | SOP - Hydraulic Conductivity Testing – W. Kingston Town Dump / URI | Final | August 2002 | Electronic | 1 Pages | Woodard & Curran, Inc. |
| WM-SF -28 | SOP - Tap Water / Residential Well Groundwater Sampling – W. Kingston Town Dump / URI | Draft | August 2002 | Electronic | 2 Pages | Woodard & Curran, Inc. |
| WM-SF -29 | SOP – Preparation & Analysis of Dioxin and Furans Samples by USEPA Method 8290– W. Kingston Town Dump / URI | Final | June 5, 2002 | Electronic (In adobe format) | 60 Pages | Pace Analytical Labs |
| **Site Remediation Program** | | | | | | |
| WM-SR-1 | Sampling Equipment Decontamination - SOP # 2006 | Final | 8/11/94 | Electronic | 11 Pages | EPA |
| WM-SR-2 | Drum Sampling - SOP # 2009 | Final | 11/16/94 | Electronic | 23 Pages | EPA |
| WM-SR-3 | Tank Sampling - SOP # 2010 | Final | 11/16/94 | Electronic | 15 Pages | EPA |
| WM-SR-4 | Chip, Wipe, and Sweep Sampling SOP # 2011 | Final | 11/16/94 | Electronic | 4 Pages | EPA |
| WM-SR-5 | Waste Pile Sampling - SOP # 2017 | Final | 11/17/94 | Electronic | 9 Pages | EPA |
| WM-SR-6 | Soil Sampling - EPA SOP # 2012 | Final | 2/18/00 | Electronic | 13 Pages | EPA |
| WM-SR-7 | Soil Gas Sampling - EPA SOP # 2149 | Final | 6/1/96 | Electronic | 11Pages | EPA |
| WM-SR-8 | Soil Sampling and Surface Geophysics - EPA SOP # 2159 | Final | 1/91 | Electronic | 6 Pages | EPA |
| WM-SR-9 | Surface Water Sampling - EPA SOP # 2013 | Final | 11/17/94 | Electronic | 7 Pages | EPA |
| WM-SR-10 | Sediment Sampling - EPA SOP # 2016 | Final | 11/17/94 | Electronic | 11 Pages | EPA |
| WM-SR-12 | Groundwater Well Sampling - EPA SOP # 2007 | Final | 11/26/95 | Electronic | 15 Pages | EPA |
| WM-SR-13 | Monitoring Well Installation - SOP # 2150 | Final | 3/18/96 | Electronic | 12 Pages | EPA |
| WM-SR-14 | Water Level Measurement - EPA SOP # 2151 | Final | 2/11/00 | Electronic | 10 Pages | EPA |
| WM-SR-15 | Well Development - EPA SOP # 2156 | Final | 10/23/01 | Electronic | 8 Pages | EPA |
| WM-SR-16 | Controlled Pumping Test - EPA SOP # 2157 | Final | 10/04/94 | Electronic | 7 Pages | EPA |

## RIDEM Inventory of Standard Operating Procedures

**Appendix C** **September 16, 2005**

| No. | SOP Name | SOP Status | Date Finalized | Format | # of Pages | Document Originator |
|---|---|---|---|---|---|---|
| WM-SR-17 | Slug Test - EPA SOP # 2158 | Final | 10/03/94 | Electronic | 5 Pages | EPA |
| WM-SR-18 | HNu Field Protocol – EPA SOP # 2179 | Final | 10/06/94 | Electronic | 16 Pages | EPA |
| WM-SR-19 | Chain of Custody Procedures - No number | Final | Unknown | Electronic | Unknown | EPA |
| WM-SR-20 | Site and Safety Considerations - No number | Final | Unknown | Electronic | Unknown | EPA |
| WM-SR-21 | Removal Program Representative Sampling Guidance – Volume 1 - Soil | Final | Unknown | Paper | 45 Pages | Unknown |
| **Leaking Underground Storage Tank Program** | | | | | | |
| WM-LUST-1 | SOP Manual for Field Sampling | Final | 5 / 1992 | Electronic | 62 pages | EA Engineering |
| **Office of Water Resources** | | | | | | |
| WR-W-1 | Bacteria Field Sampling SOP(Adapted from Watershed Watch and EPA Volunteer Monitoring Guide. | Final | August 2003 | Electronic | 1 Page | C. Turner |
| WR-W-2 | Equipment Maintenance/Calibration - Current Meters – SOP (Adapted from Marsh-McBirney, Inc, User Manuals). | Final | August 2003 | Electronic | 1 Page | C. Turner |
| WR-W-3 | Shellfish Growing Area Monitoring Program SOP | Final | March 2005 | Paper | 18 pages | J. Migliore |
| WR-W-4 | Field Data Sheet | Final | August 2003 | Electronic | 1 Page | C. Turner |
| WR-W-5 | Measuring Stream Discharge- Field Sampling SOP | Final | August 2003 | Electronic | 1 Page | C. Turner |
| WR-W-6 | Order of Activities - Sampling | Final | August 2003 | Electronic | 1 Page | C. Turner |
| WR-W-7 | Secchi Disk Measurements SOP | Final | August 2003 | Electronic | 1 Page | C. Turner |
| WR-W-8 | Rapid Bioassessment Protocol For Use In Streams And Wadeable Rivers: Benthic Macroinvertebrates | Final | Nov. 2001 | Electronic (Cover page only) | 1 Page | C. Turner |
| WR-W-9 | Measuring Culvert Stage & Flow-Field Sampling SOP | Final | August 2003 | Electronic | 2 Pages | C. Turner |
| WR-W-10 | Reading the Staff Gauge - Field Sampling SOP | Final | August 2003 | Electronic | 1 Page | C. Turner |
| WR-W-11 | Hand-Dip Sampling for the Collection of Surface Water for the Analysis of Volatile Organic Compounds | Final | August 2003 | Electronic | 1 Page | C. Turner |
| WR-W-12 | Total Phosphorous Sample Collection SOP | Final | August 2003 | Electronic | 1 Page | C. Turner |
| WR-W-13 | Installation and Operation of the Rain Tipping Bucket Rain Gauge Field Sampling SOP | Final | August 2003 | Electronic | 3 Pages | C. Turner |
| WR-W-14 | Temperature, Specific Conductance, Dissolved Oxygen, Salinity Field Sampling SOP | Final | August 2003 | Electronic | 1 Page | C. Turner |
| WR-W-15 | Chain of Custody Form – Watershed Watch | Final | August 2003 | Electronic | 1 Page | C. Turner |
| WR-W-16 | Deep Ponds: Weekly And Biweekly Water Monitoring SOP | Final | August 2003 | Electronic | 3 Pages | C. Turner |
| WR-W-17 | Shallow Ponds: Weekly And Biweekly Monitoring SOP | Final | August 2003 | Electronic | 2 Pages | C. Turner |

| RIDEM Inventory of Standard Operating Procedures<br>Appendix C — September 16, 2005 | | | | | | |
|---|---|---|---|---|---|---|
| **No.** | **SOP Name** | **SOP Status** | **Date Finalized** | **Format** | **# of Pages** | **Document Originator** |
| WR-W-18 | Shallow Ponds: Tri-season Water Monitoring And Collection SOP | Final | August 2003 | Electronic | 2 Pages | C. Turner |
| WR-W-19 | Deep Ponds: Tri-season Water Monitoring And Collection SOP | Final | August 2003 | Electronic | 3 Pages | C. Turner |
| WR-W-20 | Chlorophyll and Nutrients Sample Collection SOP | Final | August 2003 | Electronic | 5 Pages | C. Turner |

* Numbering system is noted on page nine in Procedure for Developing and Approving SOPs - DO-QM -1

# Appendix D- Standard Operating Procedure for SOP Development

## Procedure for Developing and Approving Standard Operating Procedures (DO-QM-1)

**1. APPLICABILITY.** This Standard Operating Procedure (SOP) applies to all programs in the Rhode Island Department of Environmental Management (DEM). This Procedure applies to all staff involved in any task that is appropriate for, or has an established, SOP.

**2. PURPOSE.** Establishing standardized methods for performing common repetitive tasks improves the DEM's efficiency, consistency, verifiability, credibility, and our ability to attain the highest levels of Quality Assurance, Quality Control, and Quality Improvement (QA/QC/QI). This document describes the DEM's procedure for developing, formatting, approving, and distributing standard operating procedures (SOPs).

**3. DEFINITIONS**

3.1 Director - Refers to the Director of the Rhode Island Department of Environmental Management.
3.2 Originator - Refers to the individual primarily responsible for the development of a SOP, including drafting, review, finalization, and distribution.
3.3 Quality Assurance Manager (QAM) - Refers to the individual at DEM who is the primary point of contact for quality issues and the Quality Management Team (Team).
3.4 Quality Management Team (Team)- The DEM organizes and oversees agency-wide QA/QC/QI functions with a Team. Team members represent the regulatory programs within the DEM.
3.5 Senior Management – Refers to the group of individuals existing at any point in time that oversee the DEM environmental programs.
3.6 Standard Operating Procedure (SOP) – Is the description of a prescribed method that must be used by DEM staff to complete certain routine or repetitive operations, analyses, or actions. SOPs do not establish policy and are not appropriate to describe procedures or requirements that apply to members of the public, other than persons acting as agents of, or under contract with, the DEM.

**4. RESPONSIBILITIES**

4.1 COMPLIANCE - All staff engaged in operations, analysis or actions subject to or appropriate for the application of a SOP are responsible for becoming familiar, and complying, with the contents of this procedure prior to drafting or revising a SOP. Supervisors are responsible for ensuring that staff is familiar with and adhere to the SOPs affecting their program functions. Any SOP in place before this document's effective date must be scheduled for annual review and periodic renewal by a responsible individual. At the time of any revision after the effective date of this SOP, an existing SOP must be brought into conformance with the provisions of this document. Until revision or renewal occurs, no changes are required to bring currently effective SOPs into conformance with this SOP.
4.2 DEVELOPMENT - The Originator is responsible for initial development. Initial development includes word processing and distribution for review.

4.3 APPROVAL - The Originator is responsible for obtaining preliminary and final approval of a proposed SOP.

4.4 DISTRIBUTION - After all approval signatures have been obtained, the Originator is responsible for distributing the SOP to any affected parties, as evidenced by a completed distribution list on the Coversheet. Members of the Quality Team and the Quality Assurance Manager (QAM) should receive all final SOPs.

4.5 MAINTENANCE - An individual, typically the Originator, will be assigned responsibility for ensuring that a SOP reflects current needs and standards. Consistent with DEM's Quality Management Plan, the responsible individual will annually evaluate SOPs to ensure current needs are being met; likewise, all SOPs will be renewed every five years.

## 5. GUIDELINES AND PROCEDURES

5.1 ORIGINATION - A staff member, a contractor or an agent of the Department may originate a draft or a concept for a draft SOP for any appropriate procedure or process.

5.2 CONTENTS – All new SOPs developed by DEM should include the following contents in the order outlined below. SOPs that are developed by contractors or agents of DEM shall include the following contents. The DEM project officers shall have the flexibility to waive the order of the contents if the contractor or agent is using a SOP that has been previously developed.

5.2.1 APPLICABILITY - The first section of a SOP contains a brief statement identifying the scope of the SOP and indicates the individuals and programs that are affected by the SOP.

5.2.2 PURPOSE - The second section of a SOP contains a brief statement explaining the objective of the procedure. It indicates what organization, documentation, and/or activities are involved or affected by the procedure, and a concise background description.

5.2.3 DEFINITION - The third section of a SOP lists the meaning of words or groups of words not commonly known to the potential user of the SOP. For example, technical terms and/or acronyms are described in this section.

5.2.4 RESPONSIBILITY - The fourth section of a SOP lists all the individuals or groups responsible for implementing the procedure or performing certain tasks associated with the procedure and their duties.

5.2.5 GUIDELINES AND PROCEDURES - The fifth section of a SOP lists, in detail, all the steps required to perform the particular job task.

5.2.6 REFERENCES - The final section of a SOP lists any written reference materials used in compiling the procedure.

### 5.3 FORMAT

5.3.1 CONFORMANCE TO STANDARD - All SOPs must at least include the *Page Header Contents* information as detailed in Section 5.3.2 of this SOP. If a contractor or agent of DEM develops the SOP, it will not be required to contain the DEM logo. All other information shall be included in the header. The standard text format detailed in FIGURE 2 of this SOP is required for SOPs that apply DEM-wide. The format is recommended, but not required, for bureau- or program-specific SOPs.

5.3.2 PAGE HEADER CONTENTS. Each page, including the coversheet, shall include a header containing the Department logo in the upper left corner, and a document identifier in the upper right hand corner that contains the following information in nine (9) point bolded type, Arial: SOP No ,Effective Date, Revision No, Last Revision Date, and page number.

**5.4 SOP DEVELOPMENT AND APPROVAL PROCESS -** The SOP approval process consists of a preliminary draft cycle and a final approval cycle.

5.4.1 PRELIMINARY DRAFT DEVELOPMENT - In the preliminary draft cycle, the originator contacts their direct supervisor to gain approval for going forward with drafting a proposed SOP, or one that is being drafted by a contractor or agent of DEM. Upon approval to proceed, the originator should work with appropriate staff to prepare a draft. "Appropriate staff" should include a representative group of individuals who will be affected by the SOP. Any staff member who makes a request to review a draft SOP should be provided that opportunity.

5.4.2 PRELIMINARY DRAFT APPROVAL - The signatures required for preliminary draft approval should be correspond to the scope and applicability of the SOP. SOPs applying to a discrete unit within a Office, at a minimum, need a sign-off from the project and program manager. The preliminary draft must first be submitted to the Originator's project or program manager for comment and approval to proceed with the review process. Upon receiving approval to proceed, if other supervisors on the same management level as the Originator's supervisor have staff affected by provisions in the draft SOP, the draft should then be circulated to them for review and comment. Reviewers are free to use their judgment to include additional individuals and groups whose input they believe would be valuable to the process. All required reviewers must submit a response to the Originator, indicating approval or changes necessary to obtain their approval.

5.4.3 COMMENT RECONCILIATION - The Originator of the draft SOP will resolve any issues raised in comments during the draft review cycle. Upon resolution of the comments, the Originator must obtain approval signatures on the Draft Approval Routing Sheet from any unit supervisor and Division Director whose staff will be affected by the SOP. The completed Draft Approval Routing Sheet should be retained in a file created during the SOP drafting process.

5.4.4 FINAL APPROVAL - As with preliminary draft approval, the signatures necessary for final approval should be commensurate with the SOPs scope and applicability.

(A) PROGRAM SPECIFIC SOPs. Preliminarily approved drafts of program specific SOPs must receive final approval from the relevant Office Chief and sign off from the DEM's QAM. Only these two (2) signatures should be on the SOP Coversheet.

(B) MULTI-PROGRAM / BUREAU SOPs. Preliminarily approved drafts of multi-program SOPs must receive final approval from the appropriate Bureau and Assistant Directors and a sign off from the QAM.

## 6. REFERENCES

6.1 DEM QUALITY MANAGEMENT PLAN (September 16, 2005)

# I. SAMPLE

## FIGURE 1 – SAMPLE COVERSHEET

**COVERSHEET**
**STANDARD OPERATING PROCEDURE**
**APPROVALS:**

Quality Team Chair:

_____ _____ Date: _____
Print Name Signature

Assistant Director of Water Resources

_____ _____ Date: _____
Print Name Signature

Assistant Director of Air, Waste and Compliance

_____ _____ Date: _____
Print Name Signature

If Appropriate,
Associate Director of Natural Resources

_____ _____ Date: _____
Print Name Signature

**DISTRIBUTION:**

( ) Office of Air Resources ..... By: _____ Date: _____
( ) Division of Agriculture ..... By: _____ Date: _____
( ) Office of Waste Management ..... By: _____ Date: _____
( ) Office of Compliance and Inspection ..... By: _____ Date: _____
( ) Office of Technical and Customer Assistance ..... By: _____ Date: _____
( ) Groundwater and Wetlands Protection ..... By: _____ Date: _____
( ) Surface Water Protection ..... By: _____ Date: _____
( ) Water Quality and Standards ..... By: _____ Date: _____
( ) Office of the Director ..... By: _____ Date: _____
( ) Quality Management Team ..... By: _____ Date: _____

Title:
Originator Name:

FIGURE 2 – FORMAT SENARIOS

**1. SECTION HEADING.** Section Text. (see 4.4.2)

1.1 SUB-SECTION HEADING. Subsection text. (see 4.4.3)

1.1.1 PARAGRAPH HEADING. Paragraph text. (see 4.4.4)

(A) SUB-PARAGRAPH HEADING. Sub-paragraph text (see 4.4.5)

The following description establishes the standard format and is required for all DEM-wide SOPs and suggested for any bureau- or program-specific SOPs.

TYPEFACE - All type, except the header, shall be 11 point, Arial.

PAGE MARGINS - Margins will be 1-inch top and bottom, and 1-inch left and right.

COVERSHEET CONTENTS - Each SOP must have a coversheet that contains the following information: (1) the page header described in section 4.3.2 of this SOP; (2) title; (3) Originator's name; (4) approval sign-off; and (5) a distribution check-off (see FIGURE 1, appended).

DRAFT APPROVAL SHEET - A SOP Draft Approval Sheet is used to track the review and approval of preliminary SOP drafts (see FIGURE 3, appended).

SECTIONS - The first level of written division in a SOP document is referred to as a "section". Single digit numbers are used to identify a section. The heading of a section must have the "SOP SECTION HEADING" *character style* applied to it and the text of the section, including its heading must have the "SOP Section Text" *paragraph style* applied to it. By applying these *styles* to the heading and body, each will automatically be formatted and indented to its appropriate position. A tab between the section number and heading activates the hanging indent, and two spaces between header title and any paragraph text are used to separate the heading from the body.

SUB-SECTIONS - The second level of written division in a SOP document that is part of, but separate from, a section is referred to as a "sub-section". Two numbers, separated by a period, identify a sub-section. The numbers and words in the heading of a sub-section must have the "SOP SUB-SECTION HEADING" *character style* applied to it, and the text of the sub-section, including its heading, must have the "SOP Sub-section Text" *paragraph style* applied to it. By applying these *styles* to the heading and body, each will automatically be formatted and indented to its appropriate position. A tab between the sub-section number and heading activates the hanging indent, and two spaces between end of the header title and beginning of any sub-section text are used to separate the heading from the body.

PARAGRAPHS - The third level of written division in a SOP document that is part of, but separate from, a sub-section is referred to as a "paragraph". Three numbers, separated by periods, identify a paragraph. The numbers and words in the heading of a paragraph must have the "SOP PARAGRAPH HEADING" *character style* applied to it, and the text of the paragraph, including its heading, must have the "SOP Paragraph Text" *paragraph style* applied to it. By applying these *styles* to the heading and body, each will automatically be formatted and indented to its appropriate position. A tab between the paragraph number and heading activates the hanging indent, and two spaces between end of the heading title and beginning of any paragraph text are used to separate the heading from the body.

SUB-PARAGRAPHS - The fourth and final level of written division used in a SOP document is part of, but separate from, a paragraph is referred to as a "sub-paragraph". An uppercase letter enclosed in parentheses identifies a sub-paragraph. The letter and any words in the heading of sub-paragraph must have the "SOP SUB-PARAGRAPH HEADING" *character style* applied to it, and the text of the sub-paragraph, including its heading, must have the "SOP Sub-paragraph Text" *paragraph style* applied to it. By applying these *styles* to the heading and body, each will automatically be formatted and indented to its appropriate position. A tab between the subparagraph letter and heading activates the hanging indent, and two spaces between end of the heading title and beginning of the sub-paragraph text are used to separate the heading from the body.

TABLES AND FIGURES - The inclusion of illustrative tables and figures is appropriate in SOPs. Since the format of these items will vary, no prescribed method is established herein. All tables and figures must be identified with a number and title that will have the "SOP Tables and Figures Id." *paragraph style* applied to it. By applying this *style* to the number and title, it will automatically be formatted and centered to its appropriate position.



FIGURE 3 – DRAFT APPROVAL ROUTING FORM

**DRAFT APPROVAL ROUTING FORM**
**STANDARD OPERATING PROCEDURE**
Date in Process:
Operation Title:
Identification No.:
Revision No.:
Originator Name:
**********

The attached draft is forwarded for your evaluation and comment. Suggested changes should be concise and reasons specific. Return to sender.
Supervisor:

_____ q redraft based on comments q OK
Print Name Initials Date
Office Director:

_____ q redraft based on comments q OK
Print Name Initials Date

FIGURE 4 – IDENTIFICATION AND CODING SYSTEM

Office of the Director (OD)
OD-QM..... Quality Manager

Bureau of Environmental Protection (BEP)
BEP-AWC ..... Air, Waste & Compliance
BEP-WR..... Water Resources

**Agriculture (AG)**

AG-P …… Pesticides

**AIR Resources (A)**

A-A..... Administration
A-I..... Inspection
A-M ..... Monitoring
A-MS..... Mobile Sources
A-P ..... Permitting
A-T ..... Toxics

**Legal Services (LS)**

**Waste Management (WM)**

WM-B..... Brownfields
WM-FF..... Federal Facilities
WM-MW..... Medical Waste
WM-SR..... Site Remediation
WM-SW..... Solid Waste
WM-SF..... Superfund
WM-LUST…… Leaking Underground Storage Tanks
WM-UST ……. Underground Storage Tanks

**Water Resources (WR)**

WR-GWC..... Ground Water Certification
WR-W ..... Watersheds TMDL
WR-WQC ..... Water Quality Certifications
WR-WRR ..... Water Resource Regulation

**Information Management Unit (IMU)**

# Appendix E – Inventory of Quality Management Guidance and Policy

## DEM Inventory of Quality Management Guidance and Policy

***September 16, 2005***

| No. | Guidance or Policy Description | Status | Date Finalized | Format | # of Pages | Document Originator |
|---|---|---|---|---|---|---|
| OD-QM-5 | Guidance for Annual Program Self-Assessments | Draft | | Electronic | 15 pages | T. Getz |
| WM-1 | Removal Program Representative Sampling Guidance – Volume 1 - Soil | | Unknown | Paper | 45 pages | Unknown |
| WM-LUST-1 | Leaking Underground Storage Tank Program Guidance Document | Final | October 2000 | Electronic | 28 pages | |
| WM-LUST 1 | Closure In Place (CIP) Policy | | June 15, 1998 | Electronic | 3 pages | T. Gray |
| WM-UST-1 | UST Closure Assessment Guidelines | | October 1998 | Electronic | 8 pages | |
| WM-UST-2 | Instructions For Permanent Closure Application for Underground Storage Tank(s) | | | Electronic | 6 pages | |

**APPENDIX F – DRAFT GUIDANCE FOR ANNUAL SELF-ASSESSMENTS OD-QM-5 9/16/05**

# Rhode Island
# Department of Environmental Management

## DRAFT

## *Guidance for Annual Program Self-Assessments*

September 16, 2005

This document is intended to help program managers fulfill the Annual QA Program Self-Assessment requirements as outlined in the DEM Quality Management Plan.

# Table of Contents

**1. PURPOSE** The purpose of this procedure is to ensure an effective assessment program in the Rhode Island DEM, including implementation of an assessment plan, assessment program, and assessment training.

**1.1** Assessments will be conducted at many levels in DEM to determine conformance with department procedures, quality assurance project plans, standard operating procedures (SOPs) and other applicable requirements. Other objectives of assessments are to determine the accuracy of data collection and management systems, identify opportunities for program improvements, and to verify the effectiveness of Department programs. Other important benefits of assessing are cross training, assurance that policies and procedures are current and being followed by staff, and continuous improvement.

**1.2** DEM will initiate annual program self-assessments. In the future, when there is expertise developed in the department, the guidance may be expanded to include 2nd and 3rd party assessment.

## 2. DEFINITIONS

**2.1 Assessment -** A systematic examination to determine whether quality activities and related results comply with planned arrangements and whether the arrangements are implemented effectively and are suitable to achieve objectives.

**2.2 Assessment Protocols** - Refers to written documents, data systems, checklists, procedures or guides that define the assessment scope, to assist the assessor with completing the required elements of the assessment plan, and to assist the assessor area in preparing for the assessment.

**2.3 Assessment, 1st Party -** An assessment conducted by members of the organization being assessed. The annual self-assessments currently required in the DEM Quality Management Plan are 1st party assessments.

**2.4 Assessment, 2nd Party -** An assessment conducted by individuals from within the organization being assessed, but who are not entirely independent of the organization. These are generally considered superior to 1st party assessments due to a higher degree of separation. An assessment of a program's quality system by the DEM QA Team is an example of a 2nd party assessment.

**2.5 Assessment, 3rd Party -** An assessment conducted by individuals from an organization that is entirely independent from the organization being assessed. ISO 9000 and 14001 registration assessments, and assessments of DEM by EPA are examples of 3rd party assessments.

**2.6 Documented Procedure** - A written document that details the method for an operation, analysis, or action with thoroughly prescribed techniques and steps, and that is officially approved as the method of performing certain routine or repetitive tasks. This procedure is often in the form of a memo. This memo may simply cite reliance on a standard reference.

2.7 **Program -** A functional unit of the DEM responsible for the administration of an environmental issue as defined in statute(s) or otherwise, for example in the DEM Work Plan. This administrative function is found within the Bureau / Office level. Appendix A is a listing of the programs coved by this guidance.

**2.8** **Program Manager -** The person responsible for supervising a specific DEM environmental program. This program management function is vested in staff at different administrative levels within DEM.

**2.9** **Project Manager -** The person that has direct knowledge and/or responsibility at the project or site-specific level.

**2.10** **Records** - All documents, papers, letters, maps, books, tapes, photographs, films, sound recordings, magnetic or other tapes, electronic data processing records, computer stored data, electronic mail messages, and/or other material regardless of physical form or characteristics made or received pursuant to law or ordinance or in connection with the transaction of official business by an agency to ensure adequate and proper documentation of the organization, functions, policies, decisions, procedures, and essential transactions of the agency and to maintain and furnish the information necessary to protect the legal rights of the government and of the persons directly affected by agency's activities.

## 3. RESPONSIBILITY

**3.1** This assessment procedure is applicable to all program activities defined in the Rhode Island DEM's Quality Management Plan. A program may specify additional procedures or requirements for conducting assessments within that organization. The Quality Manager and the Assistant Directors in the Bureau of Environmental Protection will identify and develop annual assessment plans, and ensure that assessments conform to this procedure.

**3.2** The Assistant Directors in the Bureau of Environmental Protection are responsible for:

- Either approving or approving with modifications, an annual assessment plan prepared by the Quality Manager, submitted for their Offices;
- Prioritizing assessment issues,
- Receiving assessment findings, and
- Ensuring timely implementation of appropriate corrective actions.

**3.3** The Quality Manager is responsible for management of the assessment program, including but not limited to the following functions:

- Developing a general annual assessment plan.
- Approving (and revising as needed) assessment procedures.
- Receiving reports of assessment findings and communicate specific findings to appropriate levels of management.
- Generally monitoring overall implementation of corrective actions from assessments.
- Evaluating the assessment program annually (and develop evaluation criteria and methodology).

**3.4** The Office / Division Chiefs Directors and program managers are responsible to implement actions that will ensure conformance with internal policies, adopted standards and defined procedures, and to ensure that necessary corrective action are made in a timely manner.

**3.5** It is the responsibility of the assessment team leaders to plan, schedule and conduct assessments according to the predefined scopes.

**3.6** It is the responsibility of all employees to be familiar with, participate in and support the Bureau's policies and procedures affecting their work.

## 4. ASSESSMENT PROCEDURE

**4.1** Program Requirements - This document has been prepared especially to assist program managers with QA System Program Self-Assessments. Assessments will be performed based on the schedule outlined in the general assessment plan.

**4.2** DEM will initially conduct initiate 1st party assessments in the programs.

**4.3** Self-assessments are to be conducted annually, finalized and submitted to the DEM QA Manager no later than by January 31 of each year.

**4.4** Program managers, with assistance with quality team members within the Office/ Division, are responsible to explicitly assess, at least annually, whether the work went as expected, what problems were encountered, whether procedures still meet program needs, and where improvements can be made.

**4.5** The Quality Team member in the Office will initiate a meeting with appropriate members of the program being requested to fill out a self-assessment form.

**4.6** The program manager will be given a copy of the self-assessment form prior to the meeting. This purpose of this meeting is to review the self-assessment form, to set a schedule for completing the form and to answer any questions concerning the self-assessment procedure.

**4.7** The assessment step must address the *root cause* of any deficiencies identified, wherever this is possible, so that procedures can be continuously improved. It is important to understand that the purpose of the self-assessment process is to identify areas for improvement, not finding fault.

**4.8** A self-assessment form is the tool that should be used when conducting an assessment. The form will be used to record and communicate the results of the self-assessment. DEM will use two forms.

**4.8.1** *Form A* is for DEM programs whose operations using environmental data are described in one or more EPA-approved Quality Assurance Project Plans (QAPPs), or who have complete Quality Assurance Manuals.

**4.8.2** *Form B* is intended for programs that are in the earlier stages of building a QA system. Form B consists of several sets of questions, each of which are specific to particular topics within the DEM QA System. Each of them refers to a chapter or section of the DEM Quality

Management Plan. Program managers should only complete the self-assessment form areas that apply to their programs. Write in "N/A," or write in a reference to another document, if applicable. Form B is also useful to help programs with established quality systems to conduct a more complete self-assessment. As noted above, use of a form can ensure that all program areas are adequately covered.

## 5. ASSESSMENT REPORTING AND CORRECTIVE ACTION FOLLOW-UP

**5.1** The project or program manager will prepare a draft assessment report within two weeks of the assessment. This report, if needed, will include a Corrective Action Report.

**5.2** The draft assessment will also include, if needed, a Corrective Action Report. This report will detail all deficiencies noted during the self-assessment and propose ways to identify areas for improvement. A draft Corrective Action Plan will be included in the Corrective Action Report.

**5.3** Copies will be forwarded to the Office / Division Chief for the project / program that was assessed.

**5.4** The self-assessments should be signed by the program manager, but may be prepared by other staff, as the program manager decides.

**5.5** The Office / Division Chief will either approve the recommended Corrective Action Plan or propose other corrective actions within four weeks of receiving the draft assessment report and a timeline for completion of each. The final self-assessment report and the Corrective Action Plan will be submitted to the appropriate to the Assistant Director and the Quality Manager.

**5.6** The Assistant Directors of the Environmental Protection Bureau will require the office to add any corrective action plans elements into the Office's / Division's work plan. The Offices will monitor completion of the corrective actions on a monthly basis. Completed actions will be deleted from the Corrective Action Plan when evidence of completion is provided and forwarded to the Quality Team member in the Office.

**5.7** If necessary, the Quality Team member may be asked to conduct a follow-up review of corrective actions to ensure effective implementation.

# QA System Annual Program Self-Assessment -- *Form A*

## Calendar Year 2005

(*Note: Please fill out one Self-Assessment Form per program*)

**Name of DEM Program:** _____

**Bureau and Division of DEM Program:** _____

**Name of Person(s) Conducting the Review:** _____

1. **I have a QAPP (Yes ☐ No ☐) and/or QA Manual (Yes ☐ No ☐) covering my program.** (*If the answer is "No" to both questions, Stop! This form is not appropriate for your program – Please use Form B*)**.**

   **Title of QA Document:** _____

   **Date of document:** _____

   **Has it been approved by ☐ EPA, ☐ Other organization/person – What/Who?** _____

   ☐ *Please attach a copy of cover and signature pages.*

   ☐ **Other – Draft under review, not approved yet.**

2. **Every year, your multi-year QAPP/QA Manual must be reviewed and updated, as necessary. This is your report of the results of that review. Please attach the following:**

   - ➔ A list of the non-conformances identified in the Calendar Year '04 (*i.e.*, last year's) review, and a description of how they were resolved; **(Ignore, this was not done last year.)**
   - ➔ A list of non-conformances identified in this year's review, and a schedule describing how you intend to address them. Note: When listing your non-conformances, please use the following convention: Year/Non-Conformance Number – 2005-01, 2005-02, 2005-03, etc. **(Ignore, this was not done last year.)**

3. **Special questions for this year:**

   **A. Have you had any personnel changes? Yes ☐ No ☐**
   ☐ *If yes, please attach updated copies of the QAPP/QA Manual Distribution List and Program/Task Organization Sections.*

   **B. Any changes in Special Training/Certification? Yes ☐ No ☐**
   ☐ *If yes, please attach updated copy of the Special Training/Certification Section.*

   **C. Do you forward staff training records to DEM Human Resources? Yes ☐ No ☐**
   ☐ *If no, please attach a description of how you keep these records.*

---

***I certify that the DEM program under my supervision is participating in the DEM Quality Assurance System and that the above accurately reflects the Annual Self-Assessment of this program's QA System.***

Program Manager Signature: _____

Printed Name: _____

Date: _____

# QA System Annual Program Self-Assessment -- *Form B*

## Calendar Year 2005

(*Note: Please fill out one Self-Assessment Form per program*)

**Name of DEM Program: _____**

**Bureau and Division of DEM Program: _____**

**Name of Person(s) Conducting the Review: _____**

---

***I certify that the DEM program under my supervision is participating in the DEM Quality Assurance System and that the above accurately reflects the Annual Self-Assessment of this program's QA System.***

Program Manager Signature: _____

Printed Name: _____

Date: _____

---

1. I have a QAPP (Yes ☐ No ☐) and/or QA Manual (Yes ☐ No ☐) covering my program. (*If the answer is "Yes" to either question, Stop! This form is not appropriate for your program – Please use Form A*).

2. Every year, your program's QA efforts must be reviewed and updated, as necessary. This is your report of the results of that review. Please attach the following:

   - ➔ A list of the non-conformances identified in the Calendar Year '05 (*i.e.,* last year's) review, and a description of how they were resolved; **(Ignore, this was not done last year.)**
   - ➔ A list of non-conformances identified in this year's review, and a schedule describing how you intend to address them. Note: When listing your non-conformances, please use the following convention: Year/Non-Conformance Number – 2005-01, 2005-02, 2005-03, etc. **(Ignore, this was not done last year.)**

**Note:** When asked to "show/provide" documentation, a copy should be attached, unless the document in question is both a) book-length *and* b) readily available, (*e.g.* EPA guidance documents).

Do not hesitate to write N/A within a section or at the top of a page that doesn't apply to your program.

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### 1. Background Information

| | |
|---|---|
| a) What data do you gather/use/compile? | |
| b) What decisions are made using these data? | |
| c) What is the audience for the data? | |

**2. Data Quality Objectives (DQOs) Ref: DEM QMP Sec 8B68Bi**

| | |
|---|---|
| a) Show/provide documentation on how you determine your data quality needs or objectives. If none documented, describe them | |
| b) How are these data quality needs/objectives communicated to staff? | |
| c) Do your DQOs change when there are enforcement concerns? | |

| | |
|---|---|
| a) **3. Sampling Ref: DEM QMP Sec 8B38Bii** Show/provide written sampling procedures<br>If none documented, describe them | |
| b) How do you field-modify sampling procedures?<br>Show/provide approval procedures.<br>How are changes approved?<br>How are changes recorded?<br>Provide documentation of field-modification guidance/procedures<br>d) How are training records kept? Show/provide documentation | |
| e) How is equipment calibrated? | |
| f) How are calibration records kept? | |
| g) How do you ensure that your sampling methods and procedures meet your data needs? | |

**4. Field Testing Ref: DEM QMP Sec 8B48Biii**

| | |
|---|---|
| a) Show/provide written field testing procedures<br>If none documented, describe them | |
| b) How do you field-modify testing procedures?<br>If not documented, describe them.<br>How are changes approved?<br>How are changes recorded?<br>Provide documentation of field-modification guidance/procedures | |
| c) How is staff trained in procedures? | |
| d) How are training records kept? | |
| e) How is equipment calibrated? | |
| f) How are calibration records kept? | |
| g) What field records are generated?<br>Show/provide copy of guidance/procedure. | |
| h) How are records kept in the office?<br>Show/provide copy of procedure/guidance | |
| i) How do you ensure that your sampling methods and procedures meet your data needs? | |

**5. In-house Testing** **Ref: DEM QMP Sec 8B68Bv**

**Note:** This is intended for DEM programs that do at least some of their own testing. It is also *not* intended for programs or persons who take water or other samples and brings them to the DOH Laboratory for testing.

| | |
|---|---|
| a) What type of in-house testing do you use? | |
| b) What methods are used? | |
| c) How do you ensure that protocols are up to date? | |
| d) How do you check in-coming sample material? | |
| e) How are data handled when a test is not run per specification? | |
| f) How is staff trained? How are training records kept? | |
| g) Show/provide copy of procedure for recording test results. | |
| h) Show/provide copy of procedure for communicating results to the data user. | |

**6. Data Assessment and Comparison of Results Against Established Criteria Ref: DEM QMP Sec B78Bvi**

| | |
|---|---|
| a) What procedures are used to determine Data Quality Objectives (DQO)? | |
| b) How are DQOs communicated to staff, EPA, any laboratories, if required with respect to detention limits, testing methods, laboratory turn-around times, lab capacity etc. | |

**7. Environmental Conditions Descriptions & Data** **Ref: DEM QMP Sec 8B88Bvii**

| | |
|---|---|
| a) How do you decide what information to record? Provide documentation of decision. | |
| b) How is the information recorded? If forms, provide copies. | |
| c) Show/provide copy of procedures for taking field notes? If none documented, describe them. | |
| d) Show/provide copy of procedures or guidance for photo-documentation. If none documented, describe them. | |
| e) How is staff trained? How are training records kept? | |
| f) How are deviations from procedures handled? Before the fact? After the fact? | |
| g) How are changes to procedures made? Who approves? How are they communicated to staff? Show/provide example document. Is there a procedure for this process? | |

**8. Reporting Results** **Ref: DEM QMP Sec. 8.Bix8**

| | |
|---|---|
| a) Who do you send data to? *Note: "Send" refers to anyone outside of the program, whether elsewhere in DEM, or external to DEM* | |
| b) Show/provide written guidance on reporting formats. If none documented, describe them. | |
| c) How do you decide who is responsible for signing the data reports? Show documentation of decision. | |
| d) When reporting to different audiences, do you vary the form or type of report? How is this decision made? | |
| e) How is staff informed of proper reporting methods? Provide example documentation | |

**9. Review & Validation of Data** **Ref: DEM QMP sec 8B98Bviii**

| | |
|---|---|
| a) Show/provide any written guidance you have to describe how you check data. If none documented, describe them. | |
| b) Show/provide any written guidance you have to describe how you address non-conforming data. If none documented, describe them. | |

**10. Retention of Data** **Ref: DEM QMP Chap. 6Aii., esp. Sec 6.2???**

| | |
|---|---|
| a) Show/provide filing procedures. If none documented, describe them. | |
| b) Do you keep back-up copies of any data? How do you decide what to back-up? Show/provide copy of procedure. | |
| c) Show/provide procedures for securing files. If none documented, describe them | |
| d) How long do you retain data? Show/provide copy of data retention decision. Include data removal/ destruction decision. | |

**11. System Reviews & Assessments** **Ref: DEM QMP Chapters 9 & 10**

| | |
|---|---|
| a) Do you *periodically* review your data quality system to see that it is up to date and appropriate? Show/provide documentation for the last review. Note: This does not refer to ad hoc adjustments. | |
| b) How do you document and correct non-conformances? | |

**Appendix A - Programs Covered**

- Office of Air Resources
    - Ambient Air Monitoring – OAR conducts or oversees the collection of ambient air quality data for federal criteria pollutants and state and federal air toxic pollutants.
    - Air Pollution Inventory – OAR collects and maintains a database of criteria and air toxics pollution that is emitted from stationary sources.
    - Mobile Source Emission Data – OAR works with DOT and analyzes data that is collected from the state vehicular emission-testing program.

- Division of Agriculture
    - This unit is responsible for enforcing state laws and regulations developed to protect people from poisonings and to prevent environmental degradation that might result from improper use of pesticides on farms, in yards, and inside homes. Through this program, commercial pesticide applicators are trained, tested, and licensed to achieve a level of competence in the pesticide application industry.

- Office of Compliance and Inspection
    - Emergency Response- OC&I maintains a staff of Emergency Responders on call 24-hours/day, 7-days/week to respond to threats from releases of oil or hazardous materials to the environment. Emergency Responders may conduct sampling to assess a situation or characterize materials under investigation.
    - Air Compliance- OC&I's air compliance program monitors exterior lead paint removal projects and responds to complaints regarding non-compliant operations as well as responding to odor complaints associated with non-compliant or unlicensed facilities.
    - RCRA Compliance Section- RCRA inspection staff conducts compliance monitoring on regulated hazardous waste management facilities, generators, and transporters, as well as responding to complaints of improper disposal of hazardous waste. Staff may conduct sampling to characterize materials under investigation.
    - Solid Waste Compliance Section- Solid waste inspection staff conducts compliance monitoring on regulated solid waste management facilities as well as responding to complaints of improper disposal of solid waste. Staff may conduct sampling to characterize materials under investigation.
    - Water Compliance- Water compliance inspection staff conduct investigations and compliance monitoring related to discharges to water bodies. Staff may conduct sampling to characterize materials under investigation.
    - Water Compliance- ISDS compliance inspection staff conduct investigations and compliance monitoring related to discharges from individual septic disposal systems. Staff may conduct sampling to characterize materials under investigation.

- Office of Technical and Customer Assistance
    - Pollution Prevention- Staff assist businesses in investigating and evaluating opportunities to reduce pollution through product substitutions and/or process modifications. Staff may

conduct sampling to characterize materials under investigation or evaluate the effectiveness of measures taken to prevent pollution.

- Office of Waste Management

    - Leaking Underground Storage Tank Assessment and Remediation- Staff oversee the investigation and clean up of properties contaminated by releases from underground storage tanks. Staff may conduct sampling to characterize materials under investigation.
    - State Site Remediation Program- Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials under the jurisdiction of RI state authorities. Staff may conduct sampling to characterize materials under investigation.
    - Brownfields Program- Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials that are proposed, or being prepared for, beneficial reuse. Staff may conduct sampling to characterize materials under investigation.
    - RCRA Compliance Section- RCRA staff conducts compliance monitoring on regulated hazardous waste management facilities and transporters. Staff may conduct sampling to characterize materials under investigation.
    - Solid Waste Compliance Section- Solid Waste staff conducts compliance monitoring on regulated solid waste management facilities and medical waste transporters. Staff may conduct sampling to characterize materials under investigation.
    - Superfund Programs- Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials under the jurisdiction of the federal Superfund program. Staff may conduct sampling to characterize materials under investigation.

- Office of Water Resources

    - Total Maximum Daily Loading (TMDL) Program- Staff oversee the investigation of surface water bodies and develop a response strategy for impacted areas. Staff may conduct sampling to characterize materials under investigation and evaluate the effectiveness of corrective measures.
    - Ambient Water Quality Monitoring Program- Staff oversees contracts for monitoring and analysis of water quality in surface waterbodies.
    - User Fee Program – Staff conducts sampling of major RIPDES permittees to assess impacts to surface waters
    - Shellfish Area Monitoring Program - Staff conducts sampling of shellfish growing areas and potential pollution sources identified during shoreline surveys.
    - RIPDES Program – Staff may periodically conduct compliance sampling of permitted discharges to surface waters or municipal wastewater treatment facilities.
    - Wastewater Treatment Facilities Operations and Maintenance Program – Staff may periodically conduct compliance sampling of wastewater treatment facilities.
    - UIC Program – Staff may collect samples from groundwater discharge points or from groundwater monitoring wells.
    - Water Quality Certification Program – Staff may periodically conduct compliance sampling.

## Appendix G - Programs Covered by Assessments

- Office of Air Resources
  - Ambient Air Monitoring – OAR conducts or oversees the collection of ambient air quality data for federal criteria pollutants and state and federal air toxic pollutants.
  - Air Pollution Inventory – OAR collects and maintains a database of criteria and air toxics pollution that is emitted from stationary sources.
  - Mobile Source Emission Data – OAR works with DOT and analyzes data that is collected from the state vehicular emission-testing program

- Office of Compliance and Inspection

  - Emergency Response- OC&I maintains a staff of Emergency Responders on call 24-hours/day, 7-days/week to respond to threats from releases of oil or hazardous materials to the environment. Emergency Responders may conduct sampling to assess a situation or characterize materials under investigation.
  - Air Compliance- OC&I's air compliance program monitors exterior lead paint removal projects and responds to complaints regarding non-compliant operations as well as responding to odor complaints associated with non-compliant or unlicensed facilities.
  - RCRA Compliance Section- RCRA inspection staff conducts compliance monitoring on regulated hazardous waste management facilities, generators, and transporters, as well as responding to complaints of improper disposal of hazardous waste. Staff may conduct sampling to characterize materials under investigation.
  - Solid Waste Compliance Section- Solid waste inspection staff conducts compliance monitoring on regulated solid waste management facilities as well as responding to complaints of improper disposal of solid waste. Staff may conduct sampling to characterize materials under investigation.
  - Water Compliance- Water compliance inspection staff conduct investigations and compliance monitoring related to discharges to water bodies. Staff may conduct sampling to characterize materials under investigation.
  - Water Compliance- ISDS compliance inspection staff conduct investigations and compliance monitoring related to discharges from individual septic disposal systems. Staff may conduct sampling to characterize materials under investigation.

- Office of Technical and Customer Assistance

  - Pollution Prevention- Staff assist businesses in investigating and evaluating opportunities to reduce pollution through product substitutions and/or process modifications. Staff may conduct sampling to characterize materials under investigation or evaluate the effectiveness of measures taken to prevent pollution.

- Office of Waste Management

  - Leaking Underground Storage Tank Assessment and Remediation- Staff oversee the investigation and clean up of properties contaminated by releases from underground storage tanks. Staff may conduct sampling to characterize materials under investigation and/or remediation.

- State Site Remediation Program- Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials under the jurisdiction of RI state authorities. Staff may conduct sampling to characterize materials under investigation and/or remediation.
- Brownfields Program- Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials that are proposed, or being prepared for, beneficial reuse. Staff may conduct sampling to characterize materials under investigation and/or remediation.
- RCRA Compliance Section- RCRA staff conducts compliance monitoring on regulated hazardous waste management facilities and transporters. Staff may conduct sampling to characterize materials under investigation.
- Solid Waste Compliance Section- Solid Waste staff conducts compliance monitoring on regulated solid waste management facilities and medical waste transporters. Staff may conduct sampling to characterize materials under investigation and/or remediation.
- Superfund Programs- Staff oversee the investigation and clean up of properties contaminated by releases of hazardous materials under the jurisdiction of the federal Superfund program. Staff may conduct sampling to characterize materials under investigation and/or remediation.

- Office of Water Resources

  - Total Maximum Daily Loading (TMDL) Program- Staff oversee the investigation of surface water bodies and develop a response strategy for impacted areas. Staff may conduct sampling to characterize materials under investigation and evaluate the effectiveness of corrective measures.
  - Ambient Water Quality Monitoring Program- Staff oversees contracts for monitoring and analysis of water quality in surface waterbodies.
  - User Fee Program – Staff conducts sampling of major RIPDES permittees to assess impacts to surface waters
  - Shellfish Area Monitoring Program - Staff conducts sampling of shellfish growing areas and potential pollution sources identified during shoreline surveys.
  - RIPDES Program – Staff may periodically conduct compliance sampling of permitted discharges to surface waters or municipal wastewater treatment facilities.
  - Wastewater Treatment Facilities Operations and Maintenance Program – Staff may periodically conduct compliance sampling of wastewater treatment facilities.
  - UIC Program – Staff may collect samples from groundwater discharge points or from groundwater monitoring wells.
  - Water Quality Certification Program – Staff may periodically conduct compliance sampling.

- Division of Agriculture

  - Pesticides Unit - This unit is responsible for enforcing state laws and regulations developed to protect people from poisonings and to prevent environmental degradation that might result from improper use of pesticides on farms, in yards, and inside homes. Through this program, commercial pesticide applicators are trained, tested, and licensed to achieve a level of competence in the pesticide application industry.

# Appendix H – FY 2006 Training Priorities

DEM training priorities for the FY 2006:

a. Data Verification/Validation/Usability Assessment.

b. QAPP training for DEM Technical Assistance Contractors (TACs) who are developing QAPPs for TBA projects.

c. Quality Management Training for DEM staff to familiarize them with the DEM QMP and resources that are located on the DEM intranet.

d. Assessment / assessment training for management system reviews, project reviews, technical system assessments and QAAP and SOP reviews. This should be tied into the skills needed to assess the DEM QMP.

# Appendix I - DEM Standard Operating Procedure for Developing QAPPs and SAPs (Draft August 24, 2005 Version) DEM-QM-02

## 1. APPLICABILITY

This Standard Operating Procedure (SOP) applies to all environmental programs and programs that are funded by the USEPA in the Rhode Island Department of Environmental Management (DEM).

## 2. PURPOSE

This SOP specifies the process and procedures to be followed by DEM for reviewing and approving Quality Assurance Program / Project Plans (QAPPs) required for environmental data activities.

## 3. DEFINITIONS

3.1. Quality Assurance Program / Project Plan (QAPP)

A Quality Assurance Program / Project Plan describes in comprehensive detail the necessary Quality Assurance (QA) policies and Quality Control (QC) and technical activities that must be implemented to ensure the results of work performed, particularly for environmental data operations, will satisfy the stated performance criteria. QAPPs document the results of certain systematic planning processes (see Rhode Island Quality Management Plan, Section III.D). QAPPs may apply to specific projects/data operations, or to a program area responsible for a number of different specific projects / operations.

3.2. Sampling and Analysis Plan (SAP)

A Sampling and Analysis Plan, also referred to as a Work Plan, documents the project-specific objectives, data quality measures, schedules, locations, field and analytic protocols, personnel, and related information needed to apply a program-level QAPP to a particular project or series of related activities.

## 4. RESPONSIBILITIES.

4.1. QAPP DEVELOPMENT

Each DEM program area involved in planning and implementing environmental data operations is responsible for assuring that QAPPs and SAPs are developed in sufficient time prior to the beginning of data gathering to allow for review, comment, revision, and approval. The project manager, in consultation with the program manager, is responsible for determining the extent of review (*e.g.,* internal or external; EPA-NE parallel review; degree of technical complexity) necessary for a particular QAPP, and thus how much time to allow.

4.2. OVERSIGHT

The program manager is responsible for assuring that necessary review and approval processes are scheduled and completed before the beginning of data operations.

4.3. ARRANGING REVIEW

The Project Manager is responsible for:

- Developing the QAPP,
- Identify persons to review the QAPP, and arrange for their participation, .
- Coordinating any required EPA-NE participation in the review/approval process, such as parallel review, technical assistance, etc.,
- Reporting the results of the review and approval process to the EPA-NE Quality Manager; and
- Forwarding DEM and ultimately approved QAPPs to the EPA-NE Office of Environmental Measurement and Evaluation and to the DEM Quality Manager

4.4.REPORTING

The QA Manager is responsible for:

- Maintaining records of the status of all QAPPs for which DEM has responsibility.
- Posting approved QAPPs on the DEM Internet and intranet.

## 5. PROCEDURES.

5.1.The QA Manager should be notified whenever a Program Manager begins work on, or contracts for the external development of, a QAPP. An expected date of completion of the initial draft should be set at this point. The Program Manager should consult on the expected levels of review that may be required, the participation of EPA-NE or an external reviewer, etc. The signatures required on the cover page of the document shall indicate the necessary level of review.

5.2.At least two weeks before the expected completion of the draft, or submission to DEM of a QAPP developed by an outside party, the Program Manager will convene a review team, if necessary. Review team members shall be selected on the basis of professional expertise relevant to the content of the QAPP. Once the review team is selected, the Program Manager, in consultation with the DEM review team leader, and any outside reviewers, will specify a date by which initial review and comment will be completed.

5.3.QAPP review may be comprised of two steps:
A Level I QAPP Completeness Check, and
A Level II Technical QAPP Review.

Both levels of review shall use EPA QA/R-5, “Requirements for Quality Assurance Project Plans” as their standard of acceptability.

5.3.1. Level I Completeness may be carried out by any person nominated by the Program Manager on the basis of familiarity with the standards of EPA QA/R-5.

5.3.2. One or more persons who are professionally competent to evaluate the methods, procedures, and protocols in the QAPP and who ideally are not subject to the QAPP shall carry out level II Technical Review. A QAPP reviewer may have been involved in developing a portion of the QAPP, provided s/he is not the reviewer of that section. *Example:* someone who consulted on the development of the QAPP

field operations protocols may review the analytic protocols.

5.3.3. The Program Manager and the DEM Office/Division Chief in whose Office/Division the QAPP is to be used shall determine the degree of independence (*e.g.,* involvement in developing the QAPP; different program area, unit, division, etc.) required of each reviewer. Where there is doubt regarding the possible independence of the reviewer,
the next degree of independence shall automatically be required.

5.4. Each separate reviewer, and the review team acting as a whole, shall document their comments in writing. Initial review comments shall be given to the author for inclusion in any revision of the QAPP. The review team leader specifies how any response to comments should be managed, and arranges an agreed date by which a revised QAPP will be returned for further review or final approval.

5.5. On receipt of the revised QAPP, the review team leader shall arrange for further review by both Level I and Level II reviewers, and set a date for an approval meeting.

5.6. If an approval meeting is required, the review team shall make a determination as follows:

Approved:
Activities specified in the QAPP may begin immediately;

Conditionally Approved:
Activities specified in the QAPP may begin subject to restrictions related to further required changes. *Example:* A revised field procedure incorporating a requested change must be filed with the Program Manager before that procedure is implemented in the field. The review team leader shall verify successful completion of approval conditions before signature by the Program Manager.

Deferred:
Activities specified in the QAPP may not begin until required changes are submitted, and the full review team approves.

The determination shall be documented in the records of the review team, and communicated to the person responsible for the QAPP as soon as possible.

5.7. A QAPP subject to the parallel approval process referred to above (4.3) must be Approved, or Conditionally Approved, by both DEM and EPA-NE before activities specified in the QAPP begin.

5.8. SAPs are considered part of the QAPP under which site or project specific activities are carried out. Generic or programs QAPPs shall specify within their main text the procedures for the submission, review, approval, maintenance, and tracking of SAPs.

5.9. Generic QAPPs will be developed using the procedures outlined above. Once a generic QAPP has been developed, project Managers only need the approval of the Program Manager to use a project specific QAPP based on the generic QAPP.

## 6. REFERENCES

Rhode Island Department of Environmental Protection, *Quality Management Plan* (September 16, 2005),

EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (EPA QA R/5). Final, March, 2001.

Appendix J

## Acceptance of Quality Management Plan

Director, RI Department of Environmental Management — Date: 10/14/05
W. Michael Sullivan

Director, RI State Program, US EPA Region I — Date: 10/24/05

for Regional Quality Assurance Manager, US EPA Region I — Date: 10/25/05
Gerry Sotolongo

Assistant Director for Water Resources, RIDEM — Date: 10/5/05
Alicia Good

Assistant Director for Air, Waste and Compliance, RIDEM — Date: 9/16/05
Terrence Gray